NEW-YORK FARMER,

AND

AMERICAN GARDENER'S MAGAZINE.

"*Agriculture, at once the cause and evidence of civilization.*"

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NEW-YORK FARMER.

NEW-YORK, FEBRUARY 1, 1838.

AGRICULTURAL REPORT FOR 1837.

We copy the following report from the *Cultivator*, for January.

"The season of vegetation, during the last year, may be denominuted a cold, and comparatively wet one. But a few hot days were experienced, and the quicksilver at no time, rose above 92° of Fahrenheit. The mean temperature, it is believed, was some degrees lower than in ordinary seasons. In some districts, frosts early in August partially injured tender crops. Other districts were not visited by frost till the middle of September, and others again not till the night of the 3d of October. Low flat districts and localities were visited most early by frost, while those more elevated, where the winds had full sweep, were last to feel its blighting effects. This was owing to the humidity and comparative stagnation of the air in the vallies. In consequence of the low temperature of the summer, vegetation was from ten to fourteen days later than usual; many fruits and vegetables, natural to warmer climates, but which have hitherto been generally brought to maturity in our gardens, and some that are indigenous in our latitude, as the hickory nut, black walnut and honey locust, did not attain maturity before the intervention of frost. The Isabella and Catawba grapes, the melon, tomato, egg plant, okra, and other tender productions of the garden, but partially ripened, except where their growth had been facilitated by glass or other artificial protection.

"We will remark here, that an opinion is entertained by many, seemingly based upon the Huttonian theory of the earth, that our climate is mutable; that there is a gradual but continual lowering of the temperature of the globe; and that it consequently becomes necessary to make a gradual transition of plants from higher to more temperate latitudes. Dr. Muse, in an address to the Dorchester Agricultural Society, Maryland, imputes to this cause, though we think erroneously, the failure of the winter wheat crop in that state, in late years. The failure of the wheat crop, in that and other districts of our country, though in part owing to the mutations of climate, we think is principally to be ascribed to defective husbandry—to the exhaustion, in the soil, of the specific food of this grain. There are various geological and historical facts, adduced in favor and against the Huttonian theory; but this is not the place, nor is it our intention, to recapitulate them, or to express an opinion in the matter. We merely allude to the subject incidentally, and pass to the permanent product of our soil—

"*Wheat.*—On the breaking up of winter, this crop looked bad, in most parts of our country. The Hessian fly had been at work, particularly in the middle states; the winter had been unpropitious, and the spring opened unfavorably. The fine weather in May, however, seemed to renovate the crop, and the prospect became cheering till the eve of the harvest. But then came the blight, which together with the grain worm, very much lessened the product in this state. From the high price of bread stuffs last year, however, larger quantities were sown than usual; and the product in the west, has been an increase upon the last crop. In the valley of the Mohawk, and upper valley of the Hudson, the crop has been diminished by the grain worm. In the middle states the crop was less than, and in the western states over, a medium one. In Maine, in consequence, it is said, of the premiums offered by the legislature to the cultivators of this crop, the product has been greatly increased, though the grain worm has done considerable damage there.

"The spring varieties of wheat seem to be coming into repute; and those of recent introduction, as the Italian, Siberian, Black sea and tea, appear well adapted to our various soils, and promise amply to reward the labor of those who cultivate them. The demand for the first named has been uncommonly great, and if it continues, as the result of the trials with it seem to lead us to expect, it will soon constitute our principal crop. Many hundred bushels of the Italian variety were sent down the Hudson, last fall, as seed, destined to the middle, southern, and eastern states.

"*Rye* has been a fair crop, we believe in every section of our country. The late sown is perhaps an exception to the remark. So far as our observation went, this last was light in product, which we, on conjectural grounds, ascribed in great part to the depredations of the grain worm.

"*Indian Corn* has been better than it was in 1836, in the vallies of the Hudson and Mohawk; in the northern and western parts of this state it has been light; in the southern, middle and western states, perhaps above a medium yield. Taking the country at large, there has been an increase of crop from last year. The early varieties are more sought after, better attention is being paid to preparing for and cultivating the crop, and harvesting by cutting the stalks at the ground, at the usual time of topping, is found to possess advantages over the other modes of saving the crop. The southern practice of stripping the blades from the stock, while the grain is in milk, is certainly a bad one.

"*Oats* have probably never been better in the north; the crop has been abundant, and grain heavy. The contant and increasing demand for this grain, and the high price which it bears, in consequence of the great number of horses employed on the canals and elsewhere, are likely to increase and improve its culture. Now that a standard weight is fixed by law, it becomes the interest of the farmer, if it was not before, to cultivate the heavier varieties, and to bestow upon them better culture than formerly. There is no grain more free from disease and insect enemies than oats. The practice of making oatmeal, for family use, and for market, has obtained to a considerable extent, particularly in Delaware and Saratoga counties.

"*Barley* has been more than a medium crop, and its culture is on the increase in northern New-York. Barley flour has been considerably used, both for bread, and as a substitute for buckwheat in griddle cakes. It is wholesome and nutritious, and for cakes is preferred by many to buckwheat.

"*Buckwheat* was sown in unusual quantities, and where it was not injured by frost, it has afforded a great yield.

"*Potatoes*, although they promised a great crop, from the growth of vines, gave nevertheless but an ordinary yield.

The quality is good; though we cannot refrain from again pressing our recommendation to farmers to cultivate only the best and most farinaceous kinds. Such are the most grateful and healthy in the family, bring the best price in market, and are withal the most nutritious for farm stock.

"*Root crops*, that is, the culture of the ruta baga, mangold wurzel and carrot, have been greatly increased the past year; and we hesitate not to say, the progress in this branch of our husbandry will be steady and rapid. The season has been propitious, and the product abundant. Some of our neighbours, novices in the culture, have been surprised and gratified with a yield of a thousand bushels the acre. We repeat that these roots, we speak from personal experience of the ruta baga, are an excellent winter food, either in whole or in part, for neat cattle, horses, sheep and pigs, and they may be made greatly to lessen the expenditure of grain, in the economy of the farm. For the table, the Swede is decidedly superior to the common turnip, after the setting in of winter. The latter then deteriorates—the former improves with keeping.

"*Peas* have given a tolerable fair yield. Our own practice does not enable us to speak of the relative profits of this crop; but we understand it makes a very good return, particularly in elevated districts exempt from the pea bug.

"*Hay* has varied in its products—in some districts not giving so good a return, and in others a better, than in 1836. On the whole, the crop may be put down as less than a fair average one. We again recommend the breaking up of old meadows where the product has become small, and of subjecting them a few seasons to the plough. Those who cannot, or will not do this, may improve their meadows by sowing grass seeds, giving them a light top dressing of dung or ashes, and of then scarifying with Concklin's Press Harrow or a like implement. By the bye, Mr. Concklin has improved his press harrow, and reduced the price, from one hundred to sixty dollars.

On the whole, taking into view all the products of the soil, the yield may be deemed full an ordinary one; for although there is a manifest deficiency in some kinds, an unusual quantity of ground was put in crop, and the harvest in other kinds has been bountiful. Our system of farming is evidently mending; improved farm implements have been multiplied, and their use greatly extended; more attention has been bestowed on select animals for breeding; better seeds are selected; root and clover culture has been extended; useful information is coming more into demand; and a new zeal is manifested both for the pursuits and improvements of husbandry.

ON THE VALUE OF HUMAN MANURE.

The following extract from Dr. Granville's report of the Thames Improvement Company, in relation to the value of human manure, or "poudrette," is of great value to the agricultural community. No reflecting person can doubt for a moment its superiority ever those manures in common use; and those, whose opinions on agricultural subjects are of high authority, with whom we have conversed, consider it at least equal to *Bone Dust*—a manure which is extensively used in England, (and by many in this country) with great success, as will be seen by an article in this number of the Farmer's Magazine:

From Dr. Granville's Report to the Thames Improvement Company.

This very question having been submitted a few years since to the consideration of the late Professor Hembstadt, of Berlin, by the Saxon and Prussian authorities, who were desirous to apply the contents of the city drains and cesspools to the recovery of barren and sandy lands, in the environs of Berlin and Dresden—that eminent agriculturist undertook, in conjunction with other learned men and practical farmers, a series of experiments, which were carried on for a great length of time, and were varied in every possible way, in order to avoid all sources of fallacy. The results of those experiments Hembstadt afterwards published, and they led to extensive agricultural operations, all of which proved successful. Professor Scuübler, the writer of the most esteemed and certainly most able Treatise on Agronomia, or the best mode of knowing and treating every species of land, repeated, and added to the experiments of Hembstadt, from which he obtained alike results. These he published in a tabular form, which has since passed into the hands of all the large practical farmers in Germany, and have formed the basis of instruction on manuring, in the hands of professors of agriculture, whom many of the continental governments have, with infinite advantage, established in institutions purposely formed to disseminate useful and practical truths in the art of farming. From that table the following facts may be collected.

If a given quantity of land sown, and without manure, yields three times the seed employed, then the same quantity of land will produce

5 times the quantity of sown, when manured with old herbage, putrid grass or leaves, garden stuff, &c.
7 times with cow dung.
9 times with pigeon's dung,
10 times with horse dung,
12 times with human urine,
12 times with goat's dung,
12 times with sheep's dung, and
14 times with human manure, or bullock's blood.

But if the land be of such quality as to produce, without manure, 5 times the sown quantity—then the horse dung manure will yield 14, and human manure 19⅔ the sown quantity.*

In addition to this information, it was ascertained that the most important crops—those, I mean, which yield most profit—such as flax, for example, so extensively cultivated in both Flanders, can only be obtained in abundance, and of the finest quality, by employing human manure.

But by far the most important point of practical knowledge in this matter, put forward by the same great authorities, and the truth of which was afterwards confirmed to me by more than one great farmer in East Flanders, is, that while the manuring with human soil has produced fourteen times the quantity sown; where horse dung has only yielded ten—the proportion of the human or Flemish manure employed was, to that of the horse dung, as 1 to 5 only; so that with one ton of the Flemish a larger produce is obtained, than with five tons of stable manure. These indisputable truths being once ascertained, let us see how they would work practically in this country.

In England, a ton of good stable manure sells for five shillings. Now an acre of arable land in an ordinary state of cultivation in England, is manured with 20 tons of horse or stable dung every fourth year, according to Professor Coventry, and consequently entails an expenditure of 5*l.* in that year. It then produces ten times the quantity of wheat sown. But an acre of the same land, similarly sown, and manured with Flemish manure, would require only four tons of it, and entail, at the price we have fixed for that manure, an expense of 2*l.* 8s. It would, then, produce fourteen times the quantity of wheat sown.

Supposing the produce of the acre manured with horse or stable dung to be five quarters of wheat,† and to sell for 15*l.*,

* It is curious how this corresponds with one of the experiments made by Mr. Burrows, an intelligent Norfolk farmer, who received the gold medal from the Society of Arts for them. On four acres of broad cast wheat, Mr. Burrows obtained 14 quarters and a fraction of wheat, having employed one quarter as seed. Had he manured his land with Flemish manure, instead of 14 quarters, he would have obtained 19⅔ quarters for the one he employed

† This is assuming a most favourable return, since I find in a report on the "Allotments," in the parish of Missenden, (as a fact of which they seem proud) that the land would, under the plough, in an average year, produce only 20 bushels of wheat, or 2½ quarters; and even Mr. Burrows, in his first rate experiment of four acres of drilled wheat, obtained no more than 16 quarters and 3 bushels, making 4 quarters and less than 1 bushel per acre. Now I have it in my notes, taken under the dictation of Mr. Smet, a great farmer in East Flanders, that a measure of wheat land corresponding to an English acre, manured with Flemish manure, produced last year 7½ sacks of wheat, of the best quality. The sack contains four measures each, weighing 180lbs. of 16 ounces—consequently there grew upon that acre 5,400lbs. of wheat. Whereas, taking the Winchester bushel of wheat to weigh 60lbs.—the acre of wheat land among the "Allotments"

that of the acre manured with Flemish manure, will be seven quarters, and sell for 21*l.*

The end of this comparative farming operation therefore would be,
1st, a saving in manure, £2 12s. per acre,
2nd, a surplus produce, £6 0s. do. in money,

Total £8 12s. per acre.

A sum which the employment of the Flemish manure would put into the pocket of the farmer, above the largest numerical result he can obtain by his present mode of cultivation. Thus far as to his private interest; but in this operation the public would also be a gainer, inasmuch as by means of it, two more quarters of wheat per acre would be sent into the market—a circumstance, which in the year 1832, would have prevented the necessity of importing into this country 463,592 quarters of foreign wheat, as appears from a return made to an order of the House of Commons in 1833.

But even this marvellous result of Flemish manuring, in the cultivation of wheat lands, falls into insignificance, when compared to that which it yields when applied to other cultivations, the produce of which, as I ascertained by minute personal inquiries at some of the largest farming establishments in Belgium, instead of being 9 only, above the ordinary produce, as before mentioned, rises as high as 12, 15, 20, and even 40 per arpent. The same may be said of it, when applied to lands completely barren, and which, having been originally rented for one florin the arpent, have, in the course of four years, been improved, through Flemish manuring, into an easy rent of 30 florins per arpent. Examples of this sort are numerous, and many such were furnished me by the authorities at Brussels, La Haye, Rotterdam, Dresden, and Berlin.

FATTENING CATTLE.

The comparative value of the various modes of feeding cattle, is not sufficiently understood. The following report is to the point.

REPORT ON FATTENING CATTLE WITH DIFFERENT VARIETIES OF FOOD.

In competition for a Premium offered by the United East Lothian Agricultural Society on that subject.

Agreeably to the condition appended to the above mentioned premium, the committee of management, immediately after I had intimated my intention of competing, appointed an efficient sub-committee to assist me in dividing a lot of twenty Aberdeenshire polled cattle, into four lots of five each, and also to superintend and report upon the manner in which the experiments were conducted,

The cattle were bought at Falkirk, on the 12th of October, and on the 24th were lotted, and put into separate yards, each of which had ample space, and shelter from the weather, by covered sheds, for the several lots which were distributed among them; and conceiving that the object which the agricultural society had in view in offering this premium, was to find out a substitute for turnips, each lot of cattle had a mixture of food allowed them, with the exception of lot No. 1, which was altogether fed upon turnips and straw, and may on that account be designated the trial lot; No. 2 had half the quantity or weight of turnips which was allowed to No. 1, with 30 lb. of linseed oil cakes, as a substitute for the remainder of the turnips; lot No. 3 had the same weight of turnips which was given to No. 2, and had ground corn in the place of the oiled cakes; the fourth lot got offal from a grain whiskey distillery, and a portion of ground beans, which was mixed into their draff every morning. By following out this arrangement, we have ascertained the quantity of turnips saved,—the value of the turnips in feeding by themselves, contrasted with the other substances,—and their value as an auxiliary feeding when used with those richer substances, which without some coarser food, will neither be an economical nor a beneficial food for cattle. All the lots had fresh straw given to them daily, which was not weighed, and below is a state of the food consumed, and the expense incurred in the fattening of each lot.

Lot No. 1, *fed on Turnips.*

1836.			
Oct. 12, To price of five cattle	£55	0	0
24, — 10 days keep of ditto on turnips and straw, at 8d.		6	8
Jan. 1, — 34 tons white globe turnips, at 8s. 4d. per ton, since 24th October till this date, being 10cwt. per day	14	3	4
Apr. 7, — 38 tons, 16 cwt. ruta baga, at 12s. 6d. per ton, since 1st Jan. till this date, being 8 cwt. per day	24	5	0
	93	15	0
At this date the Judges appointed by the Committee of Management, inspected the cattle, and reported their value to be 82*l.*			
June 7, —21 tons, 9 cwt, ruta baga since 7th April till this date, at 12s. 6d.	13	8	2
	£107	3	2

The average expense of the keep of this lot, is about 6s. 2d. per week each beast.

Lot No. 2, *fed on Turnips and Oil Cakes.*

Oct. 12, To price of five cattle	£55	0	0
24, — 10 days keep on turnips and straw, at 8d.		6	8
Jan. 1, — 17 tons white globe turnips, at 8s 4d.	7	1	8
Apr. 7, — 19 tons, 8 cwt. ruta baga, at 12s. 6d. — 1 ton, 18 cwt. foreign linseed oil cakes, at 7*l.* 15s per ton, since 16th Nov. till this date, being 30lbs. per day	12	2	6
	14	14	6
	£89	5	4
Estimated Value at this date, £88 10s.			
June 7, — 10 tons, 14½ cwt. ruta baga, at 12s.6d. — 16 cwt. 38 lbs. linseed cakes at 8*l.*	6	14	1
	6	10	8
	£102	10	1

The average expense of the keep of this lot, is about 5s. 8d. per week each beast.

Lot No. 3, *fed on Turnips and ground Corn.*

Oct. 12, To price of five cattle,	£55	0	0
24, — 10 days keep on turnips and straw, at 8d.	0	6	8
— 17 tons white globe turnips, at 8s.4d.	7	1	8
Apr. 7, — 19 tons, 8 cwt. ruta baga, at 12s. 6d. — 1 ton, 14cwt. 98lb. of bean meal, or 63 bushels ground beans, weighing 62 lb. per bushel, at 5s.	12	2	6
— 9 bushels bruised oats, at 3s. 6d.	15	15	0
	1	11	6
	£91	17	4
Estimated value at this date, 77*l.*			
June 14, — 10 tons 14½ cwt ruta baga, at 12s. 6d. — 1 ton, 9 cwt. 100 lb. bean meal, or 54 bush. ground beans. weighing 62 lb. per bushel, at 5s.	6	14	1
	13	10	0
	£112	1	5

The average expense of the keep of this lot, is about 6s. 7d. per week each beast.

This lot had latterly the rough seed of oatmeal, at 1½d. per bushel, as a mixture to the bean meal, which are not charged, being worth the price as manure.

Lot No. 4, *fed on Distillery Grains and ground Beans.*

Oct. 12, To price of five cattle,	£55	0	0

at Missenden, produced only 1,200lbs., and the experiment of Mr. Burrows 1,980lbs.; while admitting even my assumption of 5 quarters to be correct, the acre in England would yield no more than 2,400lbs, being less than the half of the Flemish produce.

Oct. 24, — 10 days keep on turnips and straw, at 8d.	0	6	8
Nov. 7, — 3 tons, 5 cwt. white globe turnips, at 8s. 4d.	1	7	1
Apr. 7, — 72 quarters draff, at 4s. 6d.	16	4	0
— 60 puncheons dreg, at 2s. 6d.	7	10	0
— 1 ton 14 cwt. 62 lb. bean meal, or 62 bushels ground beans, weighing 62 lbs. per bushel, at 5s.	15	10	0
	£94	14	6
Estimated value at this date, 81*l.* 10s.			
June 14. — 37½ quarters draff, at 4s. 6d.	8	8	9
— 28 punch. dreg, at 2s. 6d.	3	10	0
— 19 cwt. 104 lbs. bean meal, or 36 bushels ground beans, weighing 62 lbs per bushel, at 5s.	9	0	0
	£116	16	6

The average expense of the keep of this lot, is about 7s. 2d. per week, each beast.

At the commencement of these experiments, the different divisions of cattle had each their places, as well as kinds of food allotted for them; and those of the trial lot, No. 1, whose feeding was destined to be turnips alone, from being the kind of food which they were formerly accustomed to, made a more immediate improvement than the cattle of the other lots, so much so indeed, that several of my friends who saw them during this period, could not believe that a proper division of the cattle had been made, as this lot was then, about the end of November, 5*l.* better than any of the other lots.

By the above statement, it will be observed that the feeding of the lot upon half turnips and oil cakes, was the least expensive mode which was adopted in making the experiments; and that these cattle made the greatest improvement, (although after ten or twelve days trial with oil cakes, they were so obstinate in refusing them, that it was found necessary to take away their allowance of turnips for some days, and give them water in their stead, before they were induced to begin.) This was sufficiently proved by the marked difference in value put upon them by the judges appointed to report upon the comparative value of each lot, at the society's show in April. This continued in rather an increased degree during the remaining time they were here, particularly as contrasted with the trial lot, which was altogether fed upon turnips, having been estimated by good judges about the beginning of June, to be worth about forty shillings more each beast, than those of the other lot.

The improvement of the cattle in lot No. 3. was much retarded by one of their number being naturally of such an unsettled restless disposition, that he had neither time to eat himself, nor would he allow the others to do so, and although the yard which they occupied was of sufficient size for a greater number, it was not until the turbulent ox was taken away and fed by himself, that the cattle made the improvement which they ought to have done; after that, however, a very perceptible improvement took place, and by adding a little to their daily allowance of ground beans, their value when killed, as it appears by the Flesher's return, was very different from what it had been valued comparatively with the other lots at the April show. This untoward circumstance caused a greater expense in the keeping of this lot than would be otherwise necessary.

In the charge against No. 4, it will be observed that keeping upon distillery offal is more expensive than the keeping of lots No. 2 and 3 upon half turnips, these however, were the produce of the farm, and the prices were fixed by the committee, and high as they are, I could not have purchased turnips to carry here, unless by giving four or five shillings advance upon the ton weight; therefore a part of the charge against the distillery offal, will require to be set down for manure, and the same ought also to be deducted from the beans, which are charged at rather a full price.

Upon the whole, it is evident by these experiments, that feeding with turnips as an auxiliary, has been the most advantageous mode of using turnips, as by the statement it is apparent that if the cattle of lot No. 1 had only been allowed half the quantity of turnips which they consumed, and had got oil cakes in lieu of the other half, as was given to lot No. 2, the expense of their keeping would have been lessened 4*l.* 13s., and from the superior quality their value would have been increased 10*l.*, making together 14*l.* 13s.; therefore, by bestowing the remainder of the turnips, with the addition of oil cakes, upon other five cattle; the realization upon the turnips eaten by lot No. 1, would have been 29*l.* 6s. additional to what it has been.

These experiments were carried on for two months after the valuation was made at the show in April; as from an over supply in the market, caused by a scarcity of turnips, the cattle would not then have paid for their keep; but by continuing till June, I have been amply remunerated for all my outlay and trouble, without taking into account the great advantage of the additional and enriched manure of twenty cattle fattening upon the farm, where ten only could have been kept, had turnips alone been used for that purpose; and to any person at all acquainted with agriculture, it must be evident that one cart load of manure made by cattle thus fed, will be at least equal to two if the cattle had got only straw and water.

The above experiments, which are corroborated by those conducted last season by Messrs. Andrew Howden and Alexander Brodie, junior, tend to show that the winter feeding of cattle is more capable of successful extension by those who have a sufficiency of straw, but who have not such an abundance of turnips, as to be able to make all their straw into manure by cattle upon full feeding, than was formerly imagined.

Live Weight of Cattle before being travelled to Glasgow.

Lot 1.
Fed on Turnips alone.

		Stones.
No. 1	weighed	118
— 2	..	104
— 3	..	111
— 4	..	107
— 5	..	96
		536

Lot 2.
Half Turnip and Oil Cakes.

		Stones.
No. 1	weighed	115
— 2	..	118
— 3	..	105
— 4	..	122
— 5	..	92
		552

Lot 3.
Half Turnip and ground Corn.

		Stones.
No. 1	weighed	95
— 2	..	115
— 3	..	105
— 4	..	111
— 5	..	91
		517

Lot 4.
Draff, Dreg, and ground Corn.

		Stones.
No. 1	weighed	109
— 2	..	109
— 3	..	129
— 4	..	110
— 5	..	89
		545

Flesher's state of the weight of Beef, Tallow, and Hides, Carcases in Imperial Stones; Tallow and Hides in lbs.

Lot 1.

No.	Beef. stones	lbs.	Tallow. lbs.	Hides. lbs.
1	62	4	112	96
2	57	2	104	83
3	58	12	101	75
4	54	4	98	68
5	50	12	99	69
	283	3	514	391

Lot 2.

No.	Beef. stones	lbs.	Tallow. lbs.	Hides. lbs.
1	61	11	103	86
2	61	8	119	97
3	55	12	115	77
4	66	9	146	84
5	46	12	97	68
	295	10	580	412

Lot 3.

No.	Beef. stones	lbs.	Tallow. lbs.	Hides. lbs.
1	51	9	119	79
2	63	0	84	85
3	57	5	118	76
4	59	12	115	75
5	48	9	84	62
	280	7	520	377

Lot 4.

No.	Beef. stones	lbs.	Tallow. lbs.	Hides. lbs.
1	57	6	119	72
2	54	6	90	80
3	66	1	112	77
4	55	6	82	50
5	46	9	112	78
	180	0	515	357

From the cattle having travelled to Glasgow, their weight has not turned out in the manner it would have done had they been slaughtered nearer home, besides from a very great dulness taking place in the butcher market there, Mr. William Thompson, who purchased the cattle, found a great difficulty in disposing of the beef so quickly as the time of lifting required, therefore lot No. 1, which was first slaughtered, had an advantage by not being allowed to fall off from being kept after driven such a distance.

JOHN BRODIE.

Amisfield Mains, 24th August, 1837.

SMUT IN WHEAT.

To the Editors of the Nottingham Review.

GENTLEMEN,—Reading in your last paper the Nottinghamshire and Derbyshire Agricultural Report, I find this remarkable passage—"It is much to be wished, that some friendly genius would take up his pen and explain to the world, the cause of it (speaking of smut) for it is evident by ocular demonstration, that the present nostrums of the day are ineffectual." I have no pretensions to genius, but I have studied the cause and cure of smut, as much as any man in England; and if the writer of the agricultural report will adopt the plan which I shall hereafter explain, I dare stake my head against a smutty crop.

But first, the writer of the agricultural report, asks the "cause." In my humble opinion, smut is a disease to which wheat is subject or liable; in a certain sense it is hereditary—for if you will keep continually sowing the same seed, and that seed smutty, you will always have a smutty crop. There are some who deny this assertion of mine, but it has always invariably been the result of my experience. This smut can be prevented, and effectually cured, by a proper application. Many diseases in the human system yield to mercury—so does smut in wheat. Mineral poison effectually cures the smutty virus, of which perhaps arsenic may be the most effectual: vitriol and mercury, I have been told, are equally efficacious; and so they may, but they are much more expensive. Arsenic is, perhaps, the cheapest mineral we can buy, and as I am confident it is a certain cure, what occasion is there for having recourse to any other? I agree with the agricultural reporter in saying, he buys wheat more free from smut from good managed farms, than he does from those who are slovenly, and for this reason, smut is highly infectious—and that farmer who grows smutty wheat one year, is very likely to grow it a second, and so on in succession, unless he uses a proper remedy to cure the evil. A very small quantity of smutty virus will contaminate a large quantity of seed: this, some farmers will not believe, and this accounts for the different opinions farmers hold on this mysterious subject. Wheat is much more liable to take the infection after it is wetted, than before; so that it is by no means an uncommon thing (at least in that part of the country I come out of) for a farmer to grow a smutty crop after *brining*, because they are not aware how easily seed wheat, when wetted, takes the smutty infection. I have heard farmers say, they have grown a clean crop, from seed sown dry; this, I admit, is possible, and that too, very common; and it would be better in every farmer, if he is not particularly careful in brining his seed wheat, to sow it dry. I have heard other farmers say, they think brining seed wheat is but time wasted, as they have frequently grown a clean crop from dry seed, and a smutty crop from seed brined; this last has been owing entirely to the want of care. I would advise every farmer to brine his seed wheat himself, or at least, under his own immediate eye, for the greater part of the evil consequences arise from negligence and inattention to this important part of his business: this perhaps, cannot be fully impressed upon the minds of those who are sceptical on wetted seed wheat so easily taking smutty infection. Several years have now elapsed since my experiments on smut were practised; and the results, and my opinion of the cause, were published. For more than ten years I made a variety of experiments on smut, and that too, in a variety of forms; the results of them all confirmed me in my hypothesis: they were, however, published in the *Farmer's Journal*, and I received thanks from some of the first agriculturists in the United Kingdom; some in letters addressed to myself, and others through the medium of the journal. To enter freely upon the subject, would swell my letter to too great a length, neither, indeed, can I now remember every particular. Since the period just mentioned, great changes have taken place in my temporal affairs, and I have long since ceased to feel much interest in agricultural pursuits. But should this letter be approved of as worthy a place in your valuable columns, I will renew the subject at a future opportunity, as the time of year is fast approaching, for farmers to prepare their seed wheat.

I am, Gentlemen,

Your very obedient servant,

MATTHEW HOLDICH.

[We insert this communication with pleasure, and gratefully await the performance of our correspondent's promise. In the meantime, (not with any wish of forestalling him, but to exhibit beforehand our own view of the subject, and thereby enable him to remove any error under which we may labour) we insert the mode in which, we believe, white arsenic may be used as a preventive to the disease in question. The powdered *white arsenic* of the shops is usually adulterated with *lime*, either as a *sulphate* or a as *carbonate*, The genuine part of the mixture is a true acid or oxide of metallic arsenic, called by chemists *the arsenion acid*, and capable like all other acids, of forming soluble salt with *potassa*. It is desirable for the purpose of the agriculturist, that the arsenic should be rendered soluble; and therefore it should be boiled in potash or soda—the former is preferable. By this means it is reduced to the condition of a soluble *arsenite of potassa*: and provided enough potash be used, and there is no danger of excess, the whole of the arsenious acid will dissolve, and any sediment that may remain, is either a *sulphate of lime*, resulting to adulterate the drug, or an insoluble *arsenite of lime*, resulting from the decomposition of a *carbonate* used for the same fraudulent purpose. It is desirable, in order to obtain a pure article, that the farmer should buy his arsenic in a bruised or roughly powdered state. It

is even better to buy it in the lump than in the powder, as it may easily and SAFELY be reduced to a solution by the following method:—

Wrap the quantity of lump arsenia intended to be used, in brown paper, enclose it in an old rag or cloth, sufficiently large to give the lump room enough to break in. Knock the parcel well with a brick upon some flat surface, and put it, rag and all together, into a large iron pot, kept for that sole purpose, along with about twice its weight of potash, or more if needful. Boil, and continue the boiling until a clear solution, without any sediment, is the result. This solution is capable of being concentrated, by long boiling into a salt, which may be kept for years, and the solution itself will keep. It is therefore not necessary to repeat the process every season, as the article may be kept in store. Of the degree of strength in which the solution should be used, we are not judges, not having been employed in the practice of agriculture; but calculating upon the extreme virulence and power of the drug, and the minute size of the seeds of smut, a very strong solution is certainly not needed. Neither does it seem necessary that the wheat should be long steeped in the solution, as, if strong enough, its mere contact is sufficient to destroy the virus or seed of the disease. We have now done with the subject. On all questions connected with agricuiture, we shall ever be happy to throw the light of science upon the practical skill and experience of the farmers, trusting that our ignorance of the details of practical husbandry, will not prejudice that important class of the community, against any truths which our scientific researches may enable us to communicate.—EDITORS OF REVIEW.]

IRRIGATION.

The great advantages to be derived from Irrigation are not fully understood nor duly appreciated in this country.—The following extracts from a work on the subject will be found highly interesting.

IRRIGATION IN SCOTLAND.

From the "Practical Irrigator," by G. Stephens.

In 1827, I was employed by Hugh Rose, Esq. of Glastullick, to introduce the system of irrigation on his estates in Ross-shire and Sutherlandshire. On these estates three water meadows are made, and a fourth levelled and formed into bed work, and sown with grass seeds, for the reception of water in the autumn of 1830. The largest of these meadows is at Dalmore, containing sixteen acres, the greater part composed of sand beds which have been formed by the action of the water, worth only five shillings per acre in its original state. To keep the surface of the ground as nearly as possible in its natural shape, it was necessary to form the beds the same way as the water left it, so that the whole is a specimen of irregular bed and catch-work meadow.

Any quantity of water that is necessary, can be admitted from Alness river by means of a flood-sluice which is erected for that purpose. The water, in time of floods, contains large quantities of peat and other substances, which, in a few years, will form a new surface to the sandy soil.

Arabella meadow, belonging to the same proprietor, and containing three acres, was formed by means of lifting the turf, ploughing and levelling the surface, and laying the turf down again. The third meadow, containing three and a half acres, was, previously to the formation, full of large stones, and the surface very unlevel; the reducing of it to shape was partly by lifting the turf and partly by the plough. The water used for irrigating it is all from springs which rise within the distance of a mile from the meadow; and although it does not contain a large quantity of sediment, it seldom freezes, which is not the least advantage in irrigation.

Although most of these meadows are formed of the worst soil, yet, by a careful management, they have every appearance of doing well, for the Dalmore meadow already produces two hundred stone of hay per acre; and the advantage alone of the extra supply of manure, from five to six thousand stone of hay yearly, in a country where dung cannot be obtained for money, is not the least.

The late Elliot Lockhart, Esq. M.P. of Cleghorn, Lanarkshire, commenced irrigation some years ago, by means of cutting a few catch-work feeders across the ridges of a field that had been laid down to grass after corn; but the levelling of the surface had been so imperfectly executed, that the water had very little effect.

In 1827, the proprietor was at the expense of lifting the turf, and after having levelled the surface by means of the plough and spade, the turf was laid down again, and new feeders were cut for the equal distribution of the water. The effect of this last improvement has been astonishing, part of the meadow having given, in 1828, the amazing crop of five hundred and forty stone of excellent hay per acre at one cutting, which is the largest crop ever known to have been taken from any water-meadow in Britain.*

The remainder gave four hundred stone per acre at one cutting.

At Tarbax, in the same county, there are about twelve acres of water meadow, belonging to Norman Lockhart, Esq., partly bed and partly catch-work. The formation into meadow cost from four to six pounds per acre, the original value of the land per acre of yearly rent was from five to fifteen shillings, and the produce since it was irrigated, one year with another, is from two hundred to two hundred and fifty stone of hay per acre, besides the aftergrass, which is worth as much as keeps the works in repair.

At Cairnmuir, in Peeblesshire, there are two water meadows belonging to John Lawson, Esq.; the one, containing three acres, cost ten pounds in forming; and the other, containing one and a half acre, cost twelve pounds in forming; the former produces, one year with another, hay and grass to the value of thirty pounds, and the latter four hundred stone of hay per acre, besides aftermath, which is generally cut and given green to cattle.

A meadow of three acres, belonging to John Sanderson, Esq., at Romana Bridge End, not worth ten shillings per acre in its original state, has given, one year with another, since being irrigated, a thousand stone of hay, generally worth from fourpence to sixpence per stone.

Among the few farmers who have been particularly interested in promoting the system of irrigation, is James Murray, Esq., at Drochill Castle, Peeblesshire. Although Mr. Murray is only tenant of Drochill Castle farm, he has been at a considerable expense in forming ten acres into regular bed-work water meadow.†

The land was partly bog and partly arable. The boggy part was made into water meadow in 1825, and has produced large crops of hay and aftermath ever since; but the arable part did not receive water till the autumn of 1827, and even at that time the ground was not properly covered with natural grasses, for which reason, the hay crop of 1828 was comparatively small. But, as the supply of

* It is a singular fact, but not generally known to agriculturists, that by merely lifting the turf of an old pasture field that is overrun with moss, and by means of ploughing and loosening the sub-soil, and laying down the same turf again, the whole of the moss will disappear the first season, without applying either water or manure to the surface.

† There is a particular account of this water meadow in the following letter:—

Drochill Castle, 24th Jan., 1829.

"DEAR SIR,—Your letter of the 20th curt. I have been duly favoured with, and lose no time in replying to the queries therein contained. I have irrigated, first and last, about ten Scotch acres of land, but as seven of these were only done last year, I can only speak of what I know the other three have produced; these last, as you know, I watered in the year 1825. The land previous to that time was a kind of meadow, and regularly cut every year, (what of it would cut) but it was very unproductive; the quantity of hay, on an average of years, was, I believe, under a hundred stone per acre, and that of very indifferent quality. Since it has been watered, I conceive it has produced, on an average of the last three years, three hundred tron stone per Scotch acre, and of excellent quality. Perhaps the quantity in the year 1827 was under this a little, but the previous and subsequent years rather above it. I could assign no reason for crop 1827 being less than the other years, unless it arose from cutting the lattermath the year before; and if I am right in my conjecture, I would rather recommend pasturing than cutting of the second crop. I believe my second crop was well worth 1*l* 10*s*. per acre, fodder that year being uncommonly scarce, which made it the more valuable; at an average of years, however, I could not calculate at above 10*s*. or 12*s*. As to the expense of my meadow, I upon looking into my book, find it stated at 61*l*. 19*s*. for the whole ten acres I have watered, which comes to about 6*l*. 4*s*. per acre. As to my opinion of water meadows in general, it is decidedly favourable; and I would recommend it to every person who has it in his power to make the experiment, and he may rest assured that he will have no cause to regret if the management be not neglected.

I remain your most obedient servant,

JAMES MURRAY."

water is abundant and the quality particularly good, even that part, in a few years, will become as productive as the former.

At Glenormiston, the property of Wm. Stuart, Esq., in the same county, there are three water meadows, two of them contaning about two acres each, watered by a small brook that runs through the farm yard, whose washings run into the meadows. The third meadow is watered from the Tweed, and contains six acres. The former of these meadows gave, in 1818, upwards of four hundred stone of excellent hay per acre, but the latter considerably less, on account of the inferiority of the water and the impossibility of using it, except when at a certain height in the river.

As the land is all very dry, the hay is of a superior quality. What makes these meadows particularly advantageous, is the scarcity of natural hay and the want of manure in the whole district.

In 1827, I was employed to introduce irrigation into Wigtonshire. The largest meadow is at Dalreagle, on the river Bladnock, the property of Sir Alexander Muir Mackenzie, Baronet, containing nearly thirty English acres. It is mostly composed of peat to a considerable depth, and was, until a few years ago, overflowed by the water of the above mentioned river at every flood; to prevent which, the former tenant threw up an embankment round it, and made some partial drains, to free the surface of stagnant water; but as the embankment was never made sufficiently high to ward off the great floods, the improvement was neglected, and, on my arrival in the spring of 1827, the greater part of the bank being destroyed, the land had become boggy.

The first operation was to repair the bank, which cost 140*l.*; the next, to make the large conductor from the river to the meadow eight feet wide at bottom, through very hard ground, a distance of nearly half a mile, and build a flood sluice nine feet high, with hewn stone and lime; which operation, cost 60*l.*

The making of the feeders and drains, and levelling the surface of the ground, was the next operation, which cost 6*l.* 10*s.* per acre, or whole expense, including the reparation of the bank, 13*l* per acre. The value of the land previously to these improvements, was from 5*s.* to 15*s.* per acre per annum. The hay crop of 1828 was considerable, besides an immense crop of aftermath.

Although the formation of this meadow has been very expensive, there can be no doubt as to the success, if a regular management be carried on.*

Another water meadow was made the same year at Craighlaw, the property of W. C. Hamilton, Esq., and one near Creetown, for Major Campbell, with a small experimental one at Castlewig, belonging to Hugh Hawthorn, Esq.

The formation of these meadows not being finished till late in the season, the first crop could not be expected to be great; however, there can be no doubt as to their future success, if properly managed.

I have been favoured with the following short statement of the success of irrigation in Aberdeenshire, by Mr. John Boulton, land surveyor:—

"The extent of land that has been irrigated under my direction in this county is, viz. for James Ferguson, Esq. of Pitfour, ninety English acres, of all kinds of soils. The land, previous to its being made into water meadow, was valued at from 7*s.* to 15*s.* per acre of yearly rent; the expense of cutting feeders and drains, &c., was from 2*l.* to 14*l.* per acre; and the increased value by irrigation has been from 2*l.* 10*s.* to 4*l.* per acre. Since the introduction of the system at Pitfour, I have made many other water meadows, both for tenants and proprietors, which have succeeded equally with the first mentioned."*

Captain Aytoun has had the goodness to favour me with the following interesting account of Miss Rutherford's water meadows at Glendevon, and with a letter from the Rev. John Brown, minister of Glendevon, showing the comparative value of the same kind of land, under a regular rotation of cropping:—

"Dear Sir,—As you have requested me to give you an account of the produce of Miss Rutherford's water meadows at Glendevon, and an estimate of the return made by them, as well as for the expense of formation, I shall endeavour to do so as well as I can. I must say, however, that if you insert this statement in the new edition of your work, I should like your readers to understand that I do not pretend to any knowledge of Agriculture, and that, therefore, it is only the fact which I shall state, relative to the produce and the expense of forming the meadows, which can be entitled to any weight, and that my conclusions from those facts may very possibly be erroneous.

"Miss Rutherford has already formed two meadows, one of which is watered by the Devon, and measures about nine Scotch acres; the other contains two acres, and is watered by a small brook. The large meadow was formed, according to your directions, into beds, forty feet broad, raised about twelve inches in the crown. As the turf of this meadow was too tender to be lifted, the ground was ploughed several times, and then formed by the spade and barrow into bed-work.

"It was sown with grass seeds about the 20th June, 1827, and, after being watered during the ensuing winter, produced a crop of three hundred stone an acre of the finest hay, which was lodged in the barn-yard by the first of July 1828. The turf of the small meadow was lifted, and, after the ground had been ploughed and levelled for catch-work, was replaced in the usual manner. This meadow also produced about three hundred stone an acre of very fine hay; but as the water was very deficient in the spring, it was not cut so soon as the other. After the hay was removed, the meadows were watered for about a fortnight, with the intermission of a few days at a time, and the grass sprang up with the greatest rapidity. On the 21st July, forty-three sheep and ten cattle were turned into the large meadow. The sheep were ready for the butcher by the 18th of August, and most of them were sold for 4*s.* 6*d.* more than they were worth (according to the shepherd's estimate) when they were turned in. From the 18th August the meadow was watered as before, till the first of September, when thirty-five sheep were turned in it; but as they could not consume the grass, and I was desirous of preparing in time for the autumnal floods, twenty more were put in on the 10th, and twenty-eight more on the 18th September, in order that the grass might be eaten quite bare, before the feeders should be cleaned out for the winter watering. The sheep were removed on the 1st October; but the waterman being at that time busy with altering the conductor of the small meadow, watered the large one again, without cleaning out the feeders, &c.; and on the 18th October, sixty-seven sheep were turned into the meadow, in order to consume the grass produced by the last watering as quickly as possible, previous to the winter watering. On the 29th October the sheep were removed to allow the works to be cleaned, although the grass was by no means so bare as it ought to be before the winter watering commences. The supply of water for the small meadow was very scanty for the whole summer; but, notwithstanding this disadvantage, it fed forty-three sheep from 21st July till 18th August; and, after being again watered, it kept ten milch cows from 15th September till 26th October.

"The soil of both those meadows is a very light sandy loam, about twelve inch-

To Mr. George Stephens.

* I have made every inquiry to obtain a true statement of the quantity of last year's crop of hay; but the old lease of the farm being out, and the tenant not having got a new one, the hay was mixed (for reasons best known to the tenant) with other hay, by which means all my inquiry has been frustrated.

This being the first water meadow that has been made in the country, it has met with considerable opposition; but the proprietor being fully determined to give it a fair trial, has appointed an experienced person to look after it through the irrigating season.

* The product of the Aberdeenshire meadow is very deficient, in comparison with what the water meadows produce in other parts of Scotland; which appears to me to be wholly owing to the water being spread over too large a surface—an error too often committed, and which it is very difficult to dissuade proprietors from practising.

Through the course of experience, I have always found that it is more advantageous to irrigate two acres well, than three indifferently.

es thick, and lying upon a coarse gravel bottom of unknown depth. Glendevon being situated in the midst of the Ochil hills, the climate is severe during the winter, and the spring very late. The meadows are about seven hundred feet above the level of the sea. In such a climate, and at such a height, as far as I can judge, I should say that the ground, well laid down in grass, will give much more produce than it would do if ploughed for corn, &c.

"The rent paid in that part of the country for the best grass parks is 2*l.* an acre, and in the hands of the proprietor it may be supposed to make a sum of about 3*l.*

"However this may be, it is universally allowed by all the farmers in the neighbourhood, that Miss Rutherford's meadows will be as valuable in pasture, after the hay is removed, as they were before they were watered. If this is the case, and I think the statement a very fair one, it is evident that, after deducting from the value of the hay the expense of making it and of the waterman's wages, &c, the remainder will show the return made for the capital expended on the improvement.

"The formation of the meadow cost exactly 20*l.* an acre, and the average price of hay about Glendevon being 6d. a stone, the account will stand thus:—

	£. s. d.	£ s. d.
To three hundred stone at 6d.		7 10 0
Deduct expense of making day, &c.	10 0	
Deduct repairing works, &c.	1 0 0	
		1 10 0
Clear produce per acre,		£6 0 0

which, being the return for the outlay of 20*l.* is at the rate of thirty per cent.; and it ought to be observed, that the calculation proceeds upon the supposition that the produce is not to increase as the ground becomes richer and richer, in consequence of continued watering. On the other hand, however, I ought to mention that, although I could not perceive any error in the estimate which I had made of the profits of irrigation, still however I was so much astonished at the apparent result, that I was fearful lest I, like other sanguine projectors, had taken too favourable a view of the improvement, as I was sensible that if any error existed in my calculation, it could only proceed from my estimate of the former value of the ground, before it was formed into water meadows. I requested my friend Mr. Brown, the respected minister of Glendevon, to give me his opinion of the value of his glebe, which is situated close to the meadows, and the soil of which is of precisely the same nature. You will perceive by his letter, which I enclose, that, while he states that the aftergrass of the meadows is as valuable as the pasture formerly was, still he estimates the value of his ground, when under a rotation of crops, at 5*l.* per acre.

"It must, however, be considered, that as Mr. Brown consumes the whole produce of his glebe in his own family, he returns a greater part of the crop to the ground than any farmer, with a moderate single farm, could possibly do, because the farmer must dispose of a very considerable portion of his crop. You will also perceive that Mr. Brown purchases every year between three hundred and four hundred stone of hay, the whole of which, after being converted into manure, is applied to the arable part of his glebe, which contains only four acres; and that he does not charge any portion of the expense of this hay against the ground, which it appears to me he ought to do, as certainly, if he did not purchase that quantity of hay annually, and apply the manure it produces to the ground, he would not have such crops as he has But, however this may be, Mr. Brown's estimate of the value of the ground ought to be much more relied on than mine; and I therefore request you will attach it to this statement, by which means your readers will be able to judge for themselves. If they should think with Mr. Brown, that, in that high situation and severe climate, a rotation of crops is more profitable than grazing, they will probably reduce the estimate which I have made of the result of irrigation to twenty per cent.; but if they should agree with me in thinking that grazing is the most profitable husbandry in a country like Glendevon, then I have no doubt that they will also agree with me in saying, that Miss Rutherford's profit upon the capital expended in forming her meadows is not less than thirty per cent. You are well aware of the peculiar difficulties which had to be overcome in forming the conductor for the large meadow; and it was owing to those peculiar difficulties that the expense of forming Miss Rutherford's meadows was so great.

I am, dear Sir,
Your obedient servant,
M. C. W. Aytoun."

(To be continued.)

BONE MANURE.

We copy the following article on bone manure from the English Farmer's Magazine for November, and recommend its careful perusal to all our readers.

The experiments of Mr. Robt. Turner, may be, we have no doubt, implicitly relied on.

We give this article, and another on human manure, in the same number, that our readers may compare them and test their relative value the ensuing season.

MODE AND EFFECT OF EMPLOYING BONE MANURE.

By C. W. Johnson, Esq.

I proceed to notice the effects and modes of applying bones as a fertilizer, either whole, broken, or in the state of powder.

The Doncaster Agricultural Association long since paid considerable attention to the use of bones as a manure, and they have made a very valuable report, to which I have before alluded, of the result of their enquiries, in which they say:—

"The returns received by the association, satisfactorily establish the great value of bones as a manure; our correspondents, with only two exceptions, all concur in stating them to be a highly valuable manure, and on light soils superior to farm-yard dung, and other manures.

"In copying the language of one of them, in reference to dry sandy soils, we express the opinions repeated in a far greater number.

"I consider bone tillage one of the most useful manures, which has ever been discovered for the farmer's benefit. The lightness of carriage,—its suitableness for the drill, and its general fertilizing properties, render it peculialy valuable in those parts where distance from towns renders it impossible to procure manures of a heavier and more bulky description." For, as stated by another farmer, "the carting of six, eight, or ten loads per acre, is no trifling expense. The use of bones diminishes labour at a season of the year when time is of the first importance; for one waggon load, or 120 bushels of small drill bone dust, is equal to forty or fifty loads of fold manure. Upon very thin sand land, its value is not to be estimated it not only is found to benefit the particular crop to which it is applied, but extends through the whole course of crops."

The report adds, that bones have been found highly beneficial on the limestone soils near Doncaster; on petty soils, and on light loams; but on heavy soils, and on clay, they produce no benefit.

The mode of applying them is, either sowing by broad-cast, or by the drill, either by themselves, or previously mixed with earth and fermented. Bones which have been thus fermented, are decidedly superior to those which have not done so.

The quantity applied per acre is about twenty-five bushels of bone dust, and forty bushels of large broken bones. The dust is best for immediate profit; the broken half-inch bones for more continued improvement. Mr. Birk says, "if I were to till for early profit, I would use bones powdered as small as saw-dust. If I wished to keep my land in good heart, I would use principally half-inch bones, and in breaking these, I should prefer some remaining considerably larger."

The reason for this is very obvious; the larger the pieces of bone, the more gradually will a given bulk dissolve in the soil.

Such is the result of the application of

bones in Yorkshire. In Middlesex, the practice is scarcely different, as will be seen by the answers to some questions I received from a very intelligent correspondent, Mr. John Rayner, of Uxbridge, in November, 1833.

I. On what description of soil is bone dust employed with the greatest advantage? On light dry soils.

II. The quantity per acre? From 20 to 25 bushels.

III. How long has its good effects been observed to last? This question requires a more lengthened reply. The good effects of bones as a manure, have been acknowledged by many agriculturists for a number of years; but as farmers, generally speaking, are men who are not fond of trouble, and as there was great difficulty in breaking bones in sufficiently small pieces, to prevent dogs, &c. from running away with them, we can only in a few instances trace out their good effect. There is a farmer in the neighbourhood of Watford, who dressed his land with *whole bones*, some twenty years since, (at a period when you could obtain them from London for fetching) and he declares that to this day, to use his own expression, "the land has never forgotten them." Although the first season or so he found but little benefit; this I attribute to the bones being so large, the ground could not so soon act upon them. The *bone dust* is supposed to last but one season; the larger sizes of half-inch and inch, are supposed two or three years, and are always seen to most advantage after the first season.

IV. What is the expense? The dust is 2s. 3d. per bushel,—the half-inch 2s —the inch 1s. 9d.

V. What is the season, and on what crops is it generally applied? The turnip season. Bone manure shows itself to more advantage on this crop than on any other. It is drilled with a drill made on purpose, with the turnip seed: the period is from May to July. Bone dust is also used with great advantage on grass lands sown broadcast.

In the valuable and long continued experiments of Mr. Robert Turner, of Tring, in Hertfordshire, the use of bone manure has been most decidedly successful.

The soil on which these experiments were made, hitherto a common, producing only furze, is sandy, with a substrata of clay, and thenc halk. He began the use of bone manure in 1831, *on this land*, and has continued its employment for the last four years on a very bold scale, and with unvaried success. The quantity generallyapplied was from 24 to 30 bushels per acre, of the description of half-inch and dust, and the bones were invariably applied to the turnip crop.

The bones are drilled with the seed, at a distance of 18 inches, and the turnips are always horse-hoed.

The year 1831 was a very good season for this crop generally. The turnip manured with bone dust, like most others in the district, were very luxurient. About 2,000 bushels of bone manure being this year employed by Mr. Turner.

In 1832, the turnips were in general a very bad plant, the fly committing general devastation. Many cultivators in the neighbourhood of Tring, unsuccessfully sowed four or five times.

On the turnip land of Mr. Turner, 74 acres were manured with bones. The effect, with the exception of the very last sown four acres, was again most excellent; the crop being very heavy, and that too on land now first cultivated; and there was in no case any necessity to repeat the sowing. The turnips were a much better crop than in 1831.

In 1833, the turnip crops in the neighbourhood of Tring, were a very partial crop.

On the farm of Mr. Turner, about 50 acres were manured with bones. The effect, with the exception of some of the last sown turnips, was very satisfactory; the crop very heavy.

These experiments the cultivator will deem of the very first importance; the soil was not manured with any other fertilizer, except bones; and in drilling, every now and then, for the drills breadth the bones were omitted.

On these breadths of land not boned, the failure of the turnips was general and complete; they vegetated it is true, and came up, but they were wretchedly small and of no use whatever.

The turnips being fed off, and the sheep folded on the soil, without any distinction being made between boned and unboned land, the comparative experiments upon the succeeding crop were rendered uncertain.

In 1834, Mr. Turner boned about eighty acres of turnips with the best success, and with the exception of some destroyed by the wire worm, had a very excellent crop.

In 1835, on nearly an equal extent of land, notwithstanding the extreme dryness of the season, Mr. Turner had again on his turnips manured with bones, a very excellent plant, and never did this crop promise better than this season, on the lands of Tring.

The caterpillars which devastated the chalk districts of England, did not h wever omit this parish, their ravages were dreadful and complete.

And had not Mr. Turner made a most successful attack upon them by a detachment of 650 ducks, procured especially for this purpose, who devoured the black caterpillars with great voracity, his turnip crop would have been utterly destroyed. By their industry, however, twenty-five acres of turnips were cleared of the vermin, and saved from destruction.

At another farm held by the same gentleman, at Ellesboro, by the assistance of the same ducks, who were transported there in carts, for that express purpose, he saved about eight or nine acres of turnips from the caterpillars; so that there is no doubt of the importance of the services rendered by these birds. He informs me that he found it necessary to give them a quantity of corn while they were thus employed in cleaning the turnips.

The soil of the Ellesboro farm, on which the bones were tried for the first time in 1835, with complete success, is called white land, and was in a very poor state of cultivation. The experiment was entirely successful, and the turnips promised to be very good indeed; those that were saved from the caterpillars, being for the season very excellent.

This soil, called white by the farmers, is probably a mixture of clay and sand; it becomes very dry and loose in dry weather, but is described as "sticky" in wet periods.

Mr Turner possesses a capital bone mill, worked by four horses, in which he crushes all the bones employed in his farm. He pays for the coarse bones 2*l.* 15s. per ton, and fetches them fifteen miles; a ton of bones producing of half-inch and dust about 30 to 34 bushels of bone manure.

The cost of the mill, with the substantial shed which covers the machinery, horse-path, &c., was about 300*l.*, and it has been rendered available by Mr. Turner for several other purposes, such as chaff-cutting, thrashing, &c., by which the aggregate expense is materially lessened, and a very considerable annual saving effected.

For the last two years Mr. Turner has drilled with his crushed bones, an equal quantity per acre, of sheep-dung, collected for the express purpose, at an expense of 2½d. per bushel, paid to the collectors; this he prepares in the winter, by laying the bone dust in alternate layers with the sheep dung, and suffering them to remain fermenting some months until the turnip sowing. By this plan, by the fermentation of the mass, the two manures are thoroughly incorporated, and he considers that 35 bushels of the mixture, are fully equal in effect to 25 bushels of the bones. So that, allowing 3s. 6d. per acre for the expense of collecting the sheep dung, there will be a clear saving of 12s. 6d. per acre in bones, valuing these at 2s. per bushel.

The mixed bones and sheep dung is invariably drilled in with the turnip seed.

The practical farmer will hardly need any better testimony of the important value of crushed bones, than these extensive and long continued experiments of Mr. Turner.

They are not open to the common objection to experimental attempts, that they are carried on in far too limited a manner, and for much too short a period, to enable the cultivator to form from them a satisfactory conclusion; for he has annually manured with them scores of acres of turnip land, and that too in seasons which have afforded him, from

the adverse price of agricultural produce, but little encouragement to lay out money on any fertilizer of a doubtful value.

I earnestly, therefore, commend these important experiments to the attention of the practical farmer as being fraught with information of the most interesting nature, especially to those who have to contend with the poor, light, upland soils; lands which are now with difficulty retained in cultivation.

In the year 1831, on a thin chalky soil, in the neighbourhood of Amesbury, in Wiltshire, Mr. Devenish employed bone manure of the quality called "fine," drilled at the rate of twenty-four bushels per acre, with the turnip seed, on a portion of a field of about ten acres.

Part of the same field was manured with spit dung, at the rate of about 20 tons per acre, and another portion of the same field remained without any manure.

The Swedish turnips produced on the boned soil, were of four times the value of those grown upon the land manured with spit manure. Those grown on the soil without any manure, were deemed scarcely worth hoeing.

Bone manure presents to the cottager or cultivator of small plots of poor ground, as under the allotment system, a ready and cheap mode of permanently improving his land.

It would be well perhaps in some instances, if the managers under such an excellent system, were to apply the manure for the holder, and that too, if they even thought it necessary in consequence, to add to the amount of the rent.

As a manure for plantations of trees, I am not aware of any experiments with bones; I should however strongly recommend their use for ornamental plots, but in a roughly broken state. A considerable quantity of phosphate of lime is contained in all timber trees. There is no manure of a mixed animal and vegetable nature, which remains so long in the soil as bones.

As a manure for flower roots, the turnings and chippings of bones the refuse of the Birmingham cutlers, have long been employed with the best results by my friend Maund of Bromsgrove, the talented author of 'The Botanic Garden.'

Not only does he find their use increase the luxuriance of the plant, and the beauty of its colours, but there is in the application of this powder an elegance and cleanliness which cannot fail of recommending its introduction into the flower garden, and the conservatory.

Such have been some of the successful uses to which bones have been employed. The turnip crop has been the more generally experimented upon from the general difficulty of finding for this invaluable crop a sufficient supply of manure.

And with regard to other crops, the care and labour required for trying with sufficient accuracy a *comparative* agricultural experiment, must account for many discordant statements. Upon grass land however, it has been employed with very general success; but for the turnip, on poor light soils, it seems of the greatest and most undoubted value. It only promotes the luxuriance of the plant, but there is a very great probability that the gaseous matters involved by the crushed and putrifying bone, and the vigour it imparts to the crop afford the young turnip plants very considerable protection from the ravages of the fly; at least many farmers consider this as one of its valuable properties.

The complete manner in which the roots of the young turnips envelope the pieces of crushed bone with which they are drilled, shows the attractive nature of this manure, and how nourishing it is to the turnip.

I cannot conclude these observations without professing my readiness to assist in any experiments, and answer any questions which may promote a cause now proceeding so successfully. The consumption of bones has already rendered it necessary to import them from foreign countries; and it yet remains to be proved, whether the fossil phosphate of lime will not be nearly as powerful a fertilizer as the crushed or powdered bones usually employed.

General Directions.—The crushed bones have been invariably found more immediately beneficial as a fertilizer, when suffered to remain previously for some weeks, mixed with earth in heaps, exposed to the action of the atmosphere. By being thus fermented and dissolved, they are necessarily more speedily serviceable as food to the plants to which they are applied: and this observation more especially relates to the oat, barley, and other spring corn, since these do not remain on the ground for so long a period as other agricultural crops. The proportion is 50 bushels of bones, with five loads of earth or clay; or 40 bushels to five loads of common dung.

For wheat and pasture lands, the previous fermentation of the bones is, for this season, not so essential to the production of immediate benefit.

It is impossible to give any general directions for the quantity of bones to be applied per acre, since soil, situation, and climate, must all be taken into the farmer's consideration.

The following facts however have been ascertained by numerous experiments, at some of which I have personally assisted.

I. That crushed bones remain in the soil, for a length of time proportionate to the size of the pieces; the dust producing the most immediate effect, the larger pieces continuing to show the longest advantage. On arable land their good effects continue for four years; on pasture land for eight.

II. On turnips, oats, barley, and wheat, the quantity applied has been from 25 to 30 bushels, per acre; on pasture land, from 25 to 40 bushels of bone *Dust*, early in the spring.

III. The best mode of application is by the drill, with the seed corn.

IV. The bones should when first used, be alway applied for the sake of correct information, in varying quantities per acre; and on no account, should the farmer omit to leave, by comparison, a fair portion of the field, without any manure.

(From Johnson on Liquid Manure.)

On the Use and Value of Liquid Manure.—The absolutely fluid portion of the London sewers consists, generally speaking, of a mixture of urine, soap-suds, street, and other washings, blood from the slaughter houses, &c. &c., an immense mass of liquid which is naturally of the most fertilizing description. Thus it has been found by those who are most deeply conversant with the admirable system of irrigation, or watering meadows, that the water taken from a river, *below* even a small town, is infinitely more fertilizing from its waters being mixed with the town drainage, than when taken from the river *above* the town, and consequently unmixed with the sewer waters. These matters can almost always be made available near large cities, and there are one or two cases with which I am acquainted, as in the fields near Musselburgh, which are traversed by the Edinburgh town drain waters, in which the use of the mass is productive of a growth of grass of the most luxuriant description, ensuring to the farmer four or five crops in each year. And it must be remembered in the cases which I have quoted from the practical observations of the talented irrigators of the south of England, that the drainage, which they have found so useful, is not employed by them as it issues from the town sewers, but is in fact, mixed and diluted with all the waters of the river. Liquid manure has ever been gladly and zealously employed by the most able cultivators of the earth from very early periods, and is daily coming more and more into use even with the most sluggish and indolent farmers. The knowledge of its value too is not confined to one country, nor has it been one of the many valuable modern products of vegetable chemistry. Thus we learn from Sir George Staunton (Embassy to China) that the Chinese farmers ever prefer night-soil mixed with water—and irrigation, which is, as usually practised, the most diluted method of applying liquid manure, was known to the Roman farmers in Virgil's days. *Georgics*, I. i. v. 106—9.

It is hardly necessary to show that the urine, the blood, the soap suds, and other fluids of the London drains, are all well-known fertilizers, since every farmer is aware of the fact, he gladly saves all descriptions of urine for his dunghill—carefully collects and carries, even for miles, the semi-fluid refuse of the slaughter-houses, and readily gives a considerable price for even the soap-maker's waste, since he is fully aware of the value of

the small quantity of alkaline matters yet remaining even in that; and while I am writing this sentence, a paragraph has been pointed out to me in an excellently conducted paper, the Sussex Agricultural Express, which details the admirable fertilizing results of using, as a watering for vegetables, a very weak solution of soda (one pound in fourteen gallons) and states, as an instance, that the vegetable marrow-plant, when growing in common mould, has been found to surpass other plants growing in a bed of dung—the London drainage waters already contain the soda in its fluid portion, the soda of some thousand tons of soap consumed annually in London all finding their way into the sewers.

Nature is here again our instructor—the fertile fields of Syria, and some of the most profusely luxuriant lands of the Orientalists, abound in carbonate of soda. This alkali not only enters into the composition of many vegetables, but it promotes the growth of all, by preserving the moisture of the soil, and by accelerating the decomposition of the numerous organic substances found in all cultivated lands.

To the immense quantity of urine which is mixed with the drainage waters of all large cities, one source of their fertilizing powers must be mainly attributed, a fact well known equally to the farmer and to the chemist. "All urine," said the late talented Davy, "contains the essential elements of vegetables in a state of solution. During the putrefaction of urine the greatest part of the soluble animal matter that it contains is destroyed; it should consequently *be used as fresh as possible;* but if not mixed with solid matter, it should be diluted with water, as when pure it contains too large a quantity of animal matter to form a proper fluid nourishment, for absorption by the roots of plants."*

Urine has been subjected to the most careful analysis by M. Berzelius, the great Swedish chemist, and its constituents are determined by him to be as follows:

Water	933	00
Nephrin (peculiar to animal matter,)	30	10
Sulphate of potash,	3	71
Sulphate of soda,	3	16
Phosphate of soda,	2	94
Muriate of soda (common salt,)	4	45
Phosphate of ammonia,	1	65
Muriate of ammonia,	1	50
Lactic acid, Lactate of ammonia, Animal matter, mixed with nephrin,	17	14
Earthy Phosphates, (earth of bones) and fluate of lime,	1	00
Uric acid,	1	00
Mucus,	0	32
Silicia *(flint,)*	0	03
	1000	

* Agricultural Chemistry, p. 295.

† Annals of Philosophy, vol. ii. p. 423.

Well might Davy exclaim after such an analysis that "all urine contains the essential ingredients of vegetables," its magic fertilizing effects when spread upon the earth, need no longer puzzle the agriculturist, since there is hardly a single ingredient detected by the analysis of M. Berzelius which is not either direct food for vegetation, or furnishes by its decomposition a supply in another form. It contains all the ammoniacal salts of the dunghill, the phosphate of lime of bones, and abundance of easily decomposable animal matters.

On the use of the liquid portion of the Edinburgh town drainage, a very ablere-port has been made to the Thames Improvement Company, by Mr. Thomas Oliver, an excellent Scotch farmer, in which he says, "From the elevated position of Edinburgh, there is a considerable extent of ground which can be overflowed by the water from the city drains, in its progress to the sea, and of late years it has become an object of attention to the proprietors and occupiers of ground, so situated as to admit of its application; there are, I should think, not less than three hundred imperial acres to which it is regularly applied, and with great advantage."

"Such ground is annually kept in grass and yields from *three* to *six* cuttings in the season, which, let to dairymen and others, at rents varying, according to circumstances, from twelve to twenty-four pounds per acre. You will perceive from this statement, that the chief benefit derived from the drainage of Edinburgh arises from the fluid part, and if we reckon the increased yearly value of the land above mentioned at ten pounds per acre (which I think is under the mark) it yields a clear revenue of three thousand pounds per annum to the proprietors of those grounds through which the drains pass."‡

The history of the adoption of this system of town drainage irrigation at Edinburgh is very interesting, and I will therefore abridge and insert the description given of it by Mr. Stephens.§ "Edinburgh," says this intelligent land drainer, "has many advantages over the most of her sister cities; the large supply of excellent spring water is one of the greatest blessings to her numerous inhabitants, both in respect to household purposes and keeping her streets clean, as well as irrigating the extensive meadows situated below the town, where the art of man, with the common sewer water, has made even sand hillocks produce riches far superior to anything of the kind in the kingdom, or in any other country.

"By this sewer water about two hundred acres of grass land, (1834) for the most part laid into catchwork meadow, are irrigated; whereof one hundred and thirty belong to W. H. Miller, Esq, of Craigintinny, and the remainder to the Earls of Haddington and Moray, and other proprietors. The meadows belonging to these noblemen, and part of the Craigintinny meadows, or what are called the old meadows, contain about fifty acres, and have been irrigated for nearly a century. They are by far the most valuable, on account of the long and continual accumulation of the rich sediment left by the water; indeed the water is so very rich, that the tenants of the meadows lying nearest the town have found it advisable to carry the common sewer water through *deep ponds*, into which the water deposits part of the superfluous manure before it runs over the ground. Although the formation of these meadows is irregular, and the management very imperfect, the effects of the water are astonishing; they produce crops of grass not to be equalled, being cut from four to six times a year, and the grass given green to milch cows.

"The grass is let every year by public sale, in small patches of a quarter of an acre and upwards, and generally brings yearly from twenty-four to thirty pounds per acre. In 1826 part of the Earl of Moray's meadow fetched fifty-seven pounds per acre.

"About forty acres of the Craigintinny lands were formed into catch-work water meadow before the year 1800, which comprises, what is called Fillieside Bank, old meadows, and is generally let at a rent of from twenty to thirty pounds per acre. In the spring of 1821, thirty acres of waste land, called the Freegate Whins, and ten acres of poor sandy soil, were levelled and formed into irrigated meadow, at an expense of one thousand pounds. The pasturage of the Freegate Whins was let previously to this improvement for forty pounds per annum, and the ten acres for sixty pounds. They now bring from fifteen to twenty pounds an acre per annum, and may be much improved.

"This," continues Mr. Stephens, "is one of the most beneficial agricultural improvements ever undertaken; for the whole of the Freegate Whins is composed of nothing but sand deposited from time to time by the action of the waves of the sea. Never was one thousand pounds more happily spent in agriculture; it not only required a common sewer to bring about this great change, but a resolution in the proprietor to launch out his capital on an experiment of a soil of such a nature. One hundred and ten of Mr. Miller's meadows in 1827 gave a clear profit of two thousand and ten pounds; the yearly expense of keeping these meadows in repair is from ten to fifteen shillings per acre, which is more than double the expense of keeping water meadows in repair in general, for the watering of them is not only through the winter season, but the water is put on them for one or two days together, immediately after every cutting of the grass, throughout the whole of the season."

It must not be forgotten in the consideration of these very important facts, the northern situation of the good city of Edinburgh, for it is in the same latitude

‡ Paper of Dr. Granville.—Rep. of Committee, p. 31.

§ Practical Irrigator, p. 75.

as St. Petersburgh, and therefore the warmth of the meadows around it, and the consequent rapid growth of the grass, as compared with those of the valley of the Thames, must be under the same circumstance greatly inferior.

The forcing quality of liquid manure, as shewn by the constant result of irrigating with common water, and as still more strikingly confirmed by the use of the Edinburgh town drainage waters, is entirely confirmed by the practice of Mr. Knight in the employment of liquid manures for fruit trees, which I cannot give better than in his own words.

"I have shown in a former communication," says this able vegetable physiologist, "that a seedling plumstock, growing in a small pot, attained the height of nine feet seven inches in a single season; which is, I believe, a much greater height than any seedling tree of that species was ever seen to attain in the open soil. But the quantity of the earth, which a small pot contains, soon becomes exhausted relatively to one kind of plant, though it may be still fertile relatively to others, and the size of the pot cannot be changed sufficiently often to remedy this loss of fertility; and if it were ever so frequently changed, the mass of mould, which each successive emission of roots would enclose, must remain the same. Manure, therefore, can probably be most beneficially given in a purely liquid state; and the quantity which trees growing in pots have thus taken under my care, without any injury, and with the greatest good effect, has much exceeded every expectation I had formed.

"I have for some years appropriated a forcing-house at Downton to the purposes of experiment solely upon fruit trees; which, as I have frequent occasion to change the subjects on which I have to operate, are confined in pots. These at first were supplied with water, in which about one-tenth by measure of the dung of pigeons, or domestic poultry, had been infused; and the quantity of these substances (generally the latter) was increased from one-tenth to one-fourth. The water, after standing forty-eight hours, acquired a colour considerably deeper than that of porter; and in this state it was drawn off clear, and employed to feed trees of the vine, the mulberry, the peach, and other plants; a second quantity of water was then applied, and afterwards used in the same manner; when the manure was changed, and the same process repeated.

"The vine and mulberry tree being very gross feeders, were not likely to be soon injured by this treatment; but I expected the peach tree, which is often greatly injured by an excess of manure in a solid state, to give early indications of being over fed. Contrary, however, to my expectations, the peach tree maintained at the end of two years the most healthy and luxuriant appearance imaginable, and produced fruit in the last season in greater perfection than I had ever previously been able to obtain it. Some seedling plants had then acquired, at eighteen months old, (though the whole of their roots had been confined to half a square foot of mould,) more than eleven feet in height, with numerous branches, and have afforded a most abundant and vigorous blossom in the present spring, which has set remarkably well, and those trees which had been most abundantly supplied with manure, have displayed the greatest degree of health and luxuriance. A single orange tree was subjected to the same mode of treatment, and grew with equal comparative vigour, and appeared to be as much benefitted by abundant food as even the vine and the mulberry tree."*

As it is, therefore, evident from the concurring practice of not only the talented agriculturists of our own country, but of those of all parts of the world, from China to Egypt, from the low lands of northern Italy to those of Holland, that the value of any liquid manure is as great as that of the more solid: is it not more desirable, even in a national point of view, that every facility should be given to its collection and disposal? and if the drainage, from a small country town is distinctly found to render even the passing waters of a river more fertilizing to the meadows on its banks, how strongly does this fact shew the immense value of the fluid matters hourly wasted in the huge drainage of London? None of which has hitherto been employed for the purposes of irrigation, and should not some plan be speedily devised by which this rich liquid portion may be made available if only on the great marshes of Essex and Kent? Let it not be concluded that the earthy, animal, and vegetable matters brought down by the flood waters of large rivers, are of a small aggregate amount, for such is not the case; all the extensive marshy country, at the mouth of the Mississippi, has been formed by the deposits of that mighty river, and the same remark applies to the Ganges, and the Delta of Egypt. It has been calculated that the Mississippi carries into the sea 8,000,000 cubic feet of solid matters every hour, and it has been clearly established that at least 700,000 tons of animal and vegetable manure finds its way yearly into the Thames, through the sewers of London.

* Trans. of the Hor. Soc. vol. 2, p. 127.

The following article on "peat earth and peat ashes," is from the Cultivator for December. It will enable many to manure well their lands who have not done so before.

PEAT EARTH AND PEAT ASHES,

Important sources of fertility to the Farmer.

Peat earth and swamp muck, from our marshes and swamps, are composed principally of decayed vegetable matters, washed in from higher grounds, or the remains of aquatic plants, which have grown and decomposed on the spot.—They almost invariably constitute a valuable manure for uplands, and may be rendered fertile in their place of deposite—when brought into a soluble state by fermentation, or reduced to ashes by fire. These deposites of vegetable matters are often the accumulation of centuries, and have been preserved from ordinary decay by the presence of too much water, and of too little heat and air, until they have become so antiseptic in their quality, as to resist putrefaction in many cases, even when laid dry, until they are brought in contact with fermenting substances, or changed in their nature by the action of fire. These agents it is the province and interest of the farmer to apply. And to instruct him in the mode of employing these great auxiliaries of fertility, is the object of this article, and of other articles which we design to give in our future numbers.

The first step in the process, is to drain well the ground where this earth is deposited, or has accumulated; or, if this is impracticable, to remove the earth to dry ground.

The second step is, if the change is to be effected by fermentation, to mix it with other substances which will readily ferment, or reduce fermentation remotely. This may be done by top-dressing, or by composts. The latter is employed when the object is to enrich upland, and the former when the intention is to render the drained marsh or swamp fertile. The best compost is made of one part unfermented manure, and three parts of swamp earth, placed in alternate strata, to the height of four to six feet. When the temperature of the centre of the mass has reached 80 or 90 degrees, which may be ascertained by a stick shoved in, and left to acquire the temperature of the pile, fermentation has sufficiently progressed, and the whole may be mixed and applied to the soil with certain advantage.

Composts may in like manner be made with lime, green vegetable matter and ashes, and the fermentation accelerated by urine, soap suds, sea-water, kitchen wash, &c.

Fermentation may be induced by carting the earth to the cattle yards, and spreading it to the depth of eight inches or less, to become incorporated, by the tread of the cattle, with their dung, urine, and the liquids of the yard. And it may be induced remotely, by spreading the swamp earth immediately upon the upland, especially if sandy and dry, where it becomes mixed with the vegetable matters of the soil, and with them undergoes the desired change.

To induce fertility in a peaty soil, after it has been laid dry, a good dressing of long manure, or of lime, are effectual; and often a mixture of three or four inches of sand with the upper stratum, has proved highly efficacious. Pairing and burning is another sure means of inducing fertility. In this operation,

some inches of the surface, so deep at least so as to embrace the roots of aquatic and other growing plants, is pared off, dried and burnt, and the ashes spread and mixed with the soil.

These operations may be carried on at any season when the ground is not frozen, and when the teams and hands on the farm find leisure. There are but few farms, and fewer districts, that do not abound in this element of fertility.

Peat ashes constitute an article of commerce in Europe, and vast quantities are transported from Holland to Belgium and Flanders to fertilize those highly cultivated districts. These ashes cost about $13 per ton. A bushel of the best sort, which are black and heavy, weigh about forty pounds, and the ton containing fifty-six bushels, the cost of manuring with them, at the rate of nineteen bushels the acre, would be about $4,50.—These ashes, according to the analysis of Prof. Braude, contain, in 100 parts,

Of silicious earth,	32 parts.
Sulphate and muriate of soda,	6 "
Sulphate of lime,	12 "
Carbonate of lime,	40 "
Oxide of iron,	3 "
Impurities and loss,	7 "

The mode of their application, in Flanders, is as follows:—They are spread upon young clover, in the spring, in calm and hazy weather, at the rate of eighteen to twenty bushels the acre. They are also laid on pastures and on wheat, in March and April; on oats and beans in the beginning of May, and on rye in October and November. Their chief employment is, however for green crops; it having been found, on comparative trials in Flanders, that top-dressed clovers, where the ashes were used, were much earlier, heavier, and superior in every respect, to those which had undergone a top-dressing of horse and cow-dung. One of the best evidences of their utility, is the fact, that the clover crop never fails when they are applied. Besides improving the crop, they are also useful in preventing the injuries arising from insects, and when applied to pasture, they are highly serviceable in the destruction of moss. To numerous individual declarations of their beneficial effects Sir John Sincluir, to whom we are indebted for this part of our statement, adds the public declaration of eighty-three practical Flemish farmers, to the effect, that "they know by experience, that when clover is not manured with Dutch ashes, at the rate of nineteen bushels per acre, the following crop is very bad, notwithstanding any culture that may be given to the soil; whereas they always have an excellent crop of wheat after clover, and, doubtless, in proportion to the quantity of manure thus used." The farmers who signed this declaration, in most cases carted the ashes forty and fifty miles by land, after they had been transported by water from Holland. See Sir John Sinclair's account of the agriculture of the Netherlands; also Radcliff's Flanders.

But the use of peat ashes is not confined to the Netherlands. They are extensively used in Britain, and are produced in large quantities from what is termed the Newbury peat. We find in *British Husbandry*, the following description of the mode of burning the peat, and statement of the application and utilty of the ashes:—

"The peat is cut, with a peculiar kind of spade, into long pieces, about three and a half inches broad every way, after which it is conveyed from the spot where it is dug, in wheel-barrows, to a short distance, where it is spread upon the ground in regular rows, until it be dried by the sun and wind. It is thus cut down until the gravelly bottom is reached, if it can be sufficiently drained; but although persons are employed to pump the water, that cannot always be completely effected.

"After having laid thus to dry about a week the pieces are turned, and this being three or four times repeated, a small round heap is made in the middle of the place where the peat is spread, and in the centre some very dry peat is put, which being lighted, the fire communicates slowly to the rest of the parcel. When it is completely lighted, an additional quantity is put upon the heap, and this is continued till the whole is consumed, which generally occupies one or two weeks, and sometimes still longer, as quick burning is not approved of, and the rain seldom penetrates deep enough to extinguish the fire. The heaps are commonly of a circular form, and rather flat at top; at first very small, but gradually increasing, until they sometimes become two or three yards deep, and six or seven yards in diameter. According as the peat is more or less dry, or contains more or less essential oil, or, as it is termed, is more or less fat—according as the weather is favourable or otherwise, and in proportion as the heaps are more or less large, just so much a shorter or a longer time will it take to consume. A fire regularly kept up, but burning by slow degrees, will retain more of the vegetable alkali in it than a more quick one; and in proportion to the heat of the fire the same quantity of peat will produce more or less ashes: Thus it has been stated by Mr. Malcom, that in the parish of Frimby, in Surrey, three loads of dried peat, which is about the size of the usual heap, will yield from 6,000 to 7,000 bushels [of peat] which have been sometimes known to yield 2,400 bushels of good ashes; though the peat is generally so reduced in measure by combustion, that the ashes seldom yield one-fourth of its original bulk. The ashes being riddled, are then conveyed away in covered carts, and put under sheds to keep them from the wet until they are wanted for the land; for if kept under cover and dry, they are infinitely more strong and active than those which have been made some time, and have been exposed to the weather: the fresher they are, therefore, when used, the better. The usual time of applying them is in March and April, in the proportion of twelve to fifteen bushels per acre, according to soil and crop, as too large a quantity would be injurious, though, on meadow land, twenty bushels are often laid with advantage; and when not used as top-dressings, they are commonly spread at the same time the seed is sown, though for grass many people prefer the autumn. For corn crops, however, they are not in much estimation; but on turnips they are said to assist in checking the fly, and they are supposed to increase clover nearly a ton of hay the acre beyond what it would have yielded without them. Their effect, however, is not calculated to last more than a couple of years, but they are of such benefit to that crop, and to the succeeding wheat, that when a tenant quits a farm on which ashes have been laid the preceeing year, it is usually customary to allow him one-half of the expense." These ashes are sold at Newberry at about seven pence (a New York shilling) the bushel. They are found to contain from one-fourth to one-third part of gypsum, and sometimes even a larger portion. The other constituent parts are a little iron and common salt, with various proportions of clay, sand and lime.

Our attention has been turned to peat earth and peat ashes, at this time, particularly, by a late visit to Staten Island, where we saw their utility, as fertilizers of the soil, favourably developed in the practice of a gentleman, once distinguished in the business of the law, and now no less distinguished for his enlightened and systematic practice in the business of agriculture. He showed us the beds of several ponds or marshes, which he had drained, containing vast deposites of peaty earth, large quantities of which he was converting into manure, by some of the processes we have detailed, and also about 5,000 bushels of ashes which he had made recently by burning peat. His mode of obtaining the latter was as follows: He drained off the water to about three feet below the surface, and when the latter had become sufficiently firm, he went on with a six ox team, and turned ten or a dozen prairie furrows upon the outer edge of the deposite. As soon as the turf had dried sufficiently in the summer sun, he proceeded to construct the centres for his intended pits, by setting up a few sticks of wood and dry brush, at small intervals, around the border, like the centre of a coal-pit. Around these he piled his dryest turf, and having fired the interior, fresh turf was added, as circumstances seemed to warrant, till the pile became quite large. In this way, with comparative little labor, he had obtained his 5,000 bushels of ashes, which were principally intended as a top-dressing for his grass lands. So abundant did the gentleman consider his resources of

fertility—in his peat earth and peat ashes—his sea weed and his fish—in the dung of his animals, from his oxen to his poultry—and in the litter and wash of his yards and kitchen—that he calculated confidently, and we believe on safe grounds, that he would be able to manure well one hundred and sixty acres of land annually.

These hints cannot but be acceptable to farmers on the seaboard; and the highly commendable example which we have given above, we trust will stimulate them thoroughly to try these neglected means of enriching their lands. We shall offer further remarks upon this subject in our next number.

SALE OF CATTLE.—Our Agricultural readers (says the National Gazette,*) will doubtless be gratified to learn some particulars respecting the extensive sale of cattle, which took place on the 12th inst. at Powelton, and therefore we give them the following details, for which we are indebted to the courtesy of the auctioneers, Messrs Thomas & Son. Upwards of two thousand persons were present on the occasion. Of the amounts as near as can be ascertained, about four thousand four hundred dollars were purchased for, and by gentlemen of Ohio; three thousand six hundred by gentlemen of Virginia; and four thousand dollars by those of Philadelphia city and county; but it is not known at present, exactly from what parts of the Union were the other purchasers, though they came from all directions. The bidding for the cows was very spirited, prices rather exceeding the expectation of the owners; for the bulls, however, they fell short, making however, altogether, a good average sale. Full bred cows are comparatively scarce, and accordingly they brought superior prices. The following is a correct report of the sale:

Cows.		*Bulls.*	
Ruth,	$360	Collossus,	$310
Adelaide,	490	Nimrod,	470
Minna,	520	Hector,	475
Lucilla,	480	Sir Robert,	350
Empress,	420	Melbourne,	320
Brighteyes,	490	Primo,	310
Beauty,	540	Maxwell,	400
Vermilion,	430	Lewellyn,	210
Nonsuch,	410	Colostra,	260
Media,	380	Miser,	470
Ruby,	370	Brutus,	330
Mayflower,	515	Delight.	370
Profitable,	550	Prince of Wales,	310
Clarksville,	630	Lord Fairfax,	250
Virginia,	690	Bruce,	360
Woodbine,	400		
Belicia,	450		
Celebrity,	480		

The above are all from Mr. Whittaker.

The following belonged to other owners, and were not in the printed catalogue:

A Spanish Jack,	$270
A Jennet and Colt,	210
Imported Cow Isabella,	405
Fitzroslin,	200
A Heifer,	160
Dido,	75

* The sale of cattle referred to in this article took place on the 12th of September last, at Powelton, near Philadelphia.

A MODE OF PRESERVING CAULIFLOWERS THROUGH THE WINTER.

By Peter Mackenzie, Gardener, West Plean.

Cauliflowers are a great favourite with all ranks of society, and I believe that ever since they have been cultivated means have been used to preserve them through the winter. I, like the rest of my brethren, have tried various methods to effect this; such as burying them in the earth, hanging them up by the roots, keeping them in frames, &c. But by none of these methods have I succeeded so well as by the one I will presently state, which I have not seen nor heard of being practised by any one else.

Towards the end of Autumn I make a bed or beds, according to circumstances, of moist sand, in any cool house that will exclude the frost. The beds should be four inches deep. Having previously planted a greater number of cauliflower plants than would be required at the time they are to come into use, I take the surplus, when in a good condition, and cut off their roots, leaving a stalk about three or four inches long; I then cut off all the leaves, except the innermost row; and, after shortening these, I insert the stalk into the sand-bed, and cover the cauliflower with a flower-pot. In this manner a large quantity may be contained in a small space: for example, a bed twelve feet square will hold 288 heads, allowing six square inches to each head. Again, by taking those plants that are not in flower when the frost sets in, and preserving them in a growing state, in any house or shed where the light is admitted, and which will preserve them from a severe frost, these will come into use about the month of January; and, by cutting them, and putting them in the sand-bed, they will continue fit for use till the spring. In this way I have kept cauliflowers to the end of April. It will be necessary, from time to time, to examine and cut off any decayed part that may appear.—*English Gard. Mag.*

A YEOMAN OF CORNWALL.

An old farmer of the name of Greenway, who is now 87 years of age and residing in the parish of Blissland, has this season in addition to the usual routine of his farm, shorn the whole of his flock. On one of the days when he was so occupied this veteran accomplished the surprising feat of shearing 26 sheep without the help of any one, but his dog, whose business it was to fetch the sheep to his master.—*Falmouth Packet.*

EXPERIMENTS.

Our highly respected friend, Judge Bradley of Onondaga, has instituted a series of experiments, during the last summer, to determine the effects of steeps at different temperatures, upon seed grain and pulse, &c. and has published the results in the Genesee Farmer. We give an abstract.

1. Oats were dropped into a pail of strong brine. They all floated. A like parcel dropped into water not saturated with salt, sunk. Conclusion—oats may be easily and safely separated from spring wheat by throwing the grain into strong brine.

2. A parcel of chess was thrown into brine, and a part of it sunk. Conclusion—chess cannot be separated from wheat in this way.

3 & 4. Twenty kernels of wheat were put in strong brine fifteen minutes—eighteen of them grew. Twenty kernels were steeped in like manner twenty-four hours, and seventeen of them grew. Conclusion—seed wheat may be steeped twenty-four hours in strong brine without impairing the vegetating power.

6 to 8 were experiments made in steeping peas in scalding water from one to three minutes, which did not seem to impair their vitality.

9 & 10. Scalding water poured upon seed corn *did* impair its vitality. In one experiment the water was turned off immediately, in the other it was left upon the grain one minute. The grain mostly came up, but tardily, and the plants had a sickly appearance. Conclusion—seed corn should *not* be saturated with scalding water. As the object of steeping this seed is to saturate the grain, and induce early germination, water of a tepid or warm temperature, would seem to be preferable to that which is very hot.

12. Twenty kernels of wheat were put into boiling water one minute, and none of them came up.

13. Twenty kernels of badly blasted wheat were planted, and nearly all of them came up.

We avail ourselves of the earliest opportunity to publish the following address, delivered before the Berkshire Agricultural Society, October 15th, 1837, by JUDGE BUEL, of Albany, it being the twenty-seventh Anniversary of that Society. We would that every family in the United States could read this address.

ADDRESS.

Mr. President and Gentlemen of the Society:

In compliance with your invitation, I propose to offer to this assembly some remarks on the duties which devolve upon the farmer; and to discuss some of the prominent means by which those duties may be usefully and profitably performed.

Providence has imposed upon all, the obligation of providing for the wants and

comforts of themselves and their households. These wants and comforts are not limited to mere food and clothing; they embrace the mind and habits of life—intelligence, industry, frugality, benevolence. The lively exercise of these virtues, if not always necessary to prevent want, are the surest means of promoting comfort, and of securing to our children the substantial enjoyments of life.

Though there are many ways and devices by which men endeavor to obtain wealth, and happiness, there are few employments in which these are attained with so much certainty, or which are more conducive to health, to usefulness and manly independence—few which apparently better fulfil the beneficent designs of the Creator, than that assigned to our first parents, the cultivation of the earth. It has, to be sure, like all other avocations, its cares and its toils—its thorns—yet the wise and the good, engaged in its pursuits, seldom fail to draw from these, lessons of wholesome instruction; to them, every thorn has its rose. Nor does farming afford that prospect of rapid gain, which some other employments offer to our cupidity; yet neither does it on the other hand, involve the risks to fortunes and to morals, with which the schemers and speculators of the day are ever environed. It offers a sure and substantial source of gain and of usefulness, far better for the individual and the community, than fortunes made in a day, and lost in a night—made by trick, and dissipated by folly. Rural life is exempt from a crowd of evils, of rivalships and jealousies, which often cloud and embitter the lives of men in other professions.

"The husbandman should hate no one, for he should dread no rivals. If his neighbor's field is more productive than his own, he borrows a useful lesson." If his own field is the most productive, he has the satisfaction of knowing that he is teaching and benefitting his neighbor by his example. He learns to consider his own welfare as intimately identified with the prosperity of all around him. A gentleman highly distinguished for fortune, talents and usefulness—who participated largely in the honors and duties of public life, and who by his examples in rural improvement, and his writings, mainly contributed to raise the agricultural character of his district to a state of perfection, excelling that of any other district in the Union—I allude to the late Chancellor Livingston—has said, with much truth, that "If happiness is to be found upon earth, it must certainly be sought in the indulgence of those benign emotions" which are the reward of rural cares and rural labors "As Cicero," he continues, "sums up all human knowledge in the character of a perfect orator, so we might, with much more propriety, claim every virtue, and embrace every science, when we draw that of an accomplished farmer.—He is the legislator of an extensive family, and not only men, but the brute creation, are subject to his laws. He is the magistrate who expounds and carries these laws into execution. He is the physician who heals their wounds, and cures the diseases of his various patients. He is the divine who studies and enforces the precepts of reason. And he is the grand almoner of the Creator, who is continually dispensing his bounties, not only to his fellow mortals, but to the fowls of the air, and the beasts of the field."

With a conviction of these truths upon his mind, no farmer should repine at his lot, or envy the specious or substantial prosperity of his neighbor; but aim contentedly to fulfil with fidelity, the high duties imposed upon him as a cultivator of the soil.

The condition of the agriculturist imposes upon him other duties than those which regard the welfare of his household. He is to provide for the subsistence of the great national family. Most of the necessaries of civilized life are drawn from the soil, the supervision and management of which he has taken upon himself. Our population is divided into professions and trades, to each of which belong particular offices; and the welfare of the whole depends upon each fulfilling, with fidelity, its respective relative duties. A mutual dependence and obligation exist among the various classes, which can neither be neglected or slighted by one class, without serious detriment to the whole. The obligation is particularly mandatory upon the tiller of the soil; for upon his labors the other classes mainly depend, for many of the absolute necessaries of civilized life. If the farmer is industrious and intelligent—for intelligence serves greatly to abridge labour, and to multiply its products and its profits—the bounties of the soil, with the blessing of Providence, will be abundant, and plenty will spring up in every corner of the land. But the soil will withhold its treasures, in proportion as ignorance prevails, or as rural labor relaxes its efforts, and the consequent suffering is felt, with the certainty and force of an electric shock, through the whole social circle.—We want nothing but the melancholy experience of the last year to persuade us of this truth.

Society is dependent upon the farmer, not only for the necessaries, but indirectly for many of the refinements of life. Agriculture furnishes most of the labor which creates our wealth; it provides most of the raw materials for the manufacturing arts, it freights the bark of commerce; and, by receiving in exchange the fabrics of the one and the commodities of the other, it sustains and enriches both.

He who does not appreciate his social obligations, or knowing, neglects to fulfil them, and lives only for himself, perverts his noblest faculties, and lives and dies a stranger to the best feelings which dignify human nature.

Our agriculturists are also specially charged with the guardianship of our freedom. They constitute the fountains of political power, and are the conservators of the whig principles which made us an independent nation. If the fountains are impure, the stream of power will be defiled and corrupt. The farmers compose the great body of our population, and must ever, while we remain a free people, control the destinies of the republic, and give the impress to our national character. Their republican and independent bearing—their sober good sense, unostentatious habits, and love of order, must protect us alike from the wily encroachments of ambition, the enervating and corrupting influence of wealth, and the tumult and the violence of the mob. They are to a free state, what the mainspring is to the watch—the great moving and regulating power. Rome remained free while her middling classes retained a controlling influence in her public affairs, and she sunk to despotism, in proportion as this barrier between her patricians and her plebeians, was broken down and destroyed. "The corruption of Rome began," says Sismondi, "from the time that the middle class ceased to impress its own peculiar character on the whole nation; this corruption increased in proportion as the intermediate ranks disappeared; it was carried to its highest pitch, when the whole empire consisted of men of enormous wealth and populace. It is in fact," he continues to remark, "in the middle classes, that the domestic virtues—economy, forethought and the spirit of association—mainly reside. It is in them, that a certain degree of energy is incessantly called into operation, either as a means of rising, or of keeping the position already acquired. It is in them alone that the sentiment of social equality, on which all justice is based, can be kept alive. Grandeur isolates a man; vast opulence accustoms each individual to look upon himself as a distinct power. He feels that he can exist indepently of his country; that his elevation, or his fall, may be distinct; and ere long, the servile dependents by whom a man who spends as much as a petty state, is sure to be surrounded, succeed in persuading him, that his pleasures, his pains, nay, his slightest caprices, are more important than the thousands of families, whose means of subsistence he engrosses."

In view of the high duties and responsibilities which devolve upon the farmer, as a parent, a tiller of the soil, and a watchman on the citadel of freedom, it becomes us to enquire, what are the best means of enabling him to act well his part on the theatre of life, in the several capacities that have been enumerated.

The duties of a parent to his children, may be composed in a brief sentence: teach them what good men in every age, as well as divine inspiration, have

defined to be the cardinal virtues,—*love to God and good will to man*—teach them to be industrious, to be frugal, to be temperate, to be humble, to be honest, to be kind-hearted, and *teach them by example.*

Health is among the first blessings of life, and the prudent man will always endeavor to secure it for himself and his family. This may be promoted by many little attentions which some do not know how to value, and which others, knowing, shamefully disregard.

Temperance in all our animal indulgences, as well as in our passions, is particularly promotive of health. The human frame is so delicately and wonderfully made, that any excess or violence, which may impair the functions of one part, may cause irremediable injury to the whole system.

The air we breathe, though essential to life, becomes vitiated, and prejudicial to health, by respiration, by putrifying vegetable and animal matters, by stagnant waters, and by a state of rest.—Hence our dwellings should be located in dry and healthy situations, our apartments should be roomy, kept in a cleanly order, and frequently aired; every species of putrifying substance should be removed from our house-yards and cellars, and the latter kept dry, by drains, if necessary, and often ventilated.

The offices of the skin, are all important to health. Lavossier has shown, that upon the lowest estimate, the skin is endowed with the important charge of removing from the system, by the process of insensible perspiration, about twenty ounces of waste matter in every twenty-four hours, while the maximum has been found to amount to five pounds a day. These excretions are greater in amount, Dr. Combe adds, than the united excretions of the bowels and kidneys. The facts admonish us, that if the functions of the skin become suspended, by a disregard to cleanliness, by too great indulgence in sedentary habits, by exposure to sudden transitions of temperature, or other causes, and the impurities which are ordinarily thrown off by this channel, are suffered to remain and accumulate in the system, health must be impaired and endangered. So important is a clean skin considered in the economy of health, that frequent ablutions have been enjoined as a religious duty among eastern nations. A like attention, among us to keep in wholesome exercise, the important functions of the skin, cannot fail of being highly conducive to health.

Vegetation purifies the air, and health, as well as beauty and comfort, are essentially promoted, by surrounding our dwellings with fruit and shade trees, and ornamental plants. The splendid elm which stands on yonder common, is alike the ornament and pride of the town. What a lesson of instruction does this afford! Every man may plant an elm and a maple, an apple tree and a vine, a lilac and a rose bush, in a leisure hour, and may live to enjoy their shade, their fruit, and their fragrance; or should Providence otherwise ordain, may leave them as a grateful inheritance to his posterity. Our fathers planted for us, and we should requite the obligation, by planting for our children.

Most of the diseases which afflict our species, may be traced to impure air, obstructed perspiration, or intemperate indulgences.

Another source of high, but rational gratification to the farmer, is the garden. This may be made to administer largely to the variety of his viands, the subsistence and health of his family, and the recreation and improvement of the mind, without materially abstracting from the labors of the farm. So strong is my conviction of the economy and salutary influence of a well cultivated garden, that when I chance to see one in travelling abroad, I involuntary ascribe to its occupants, economy, good taste, and domestic enjoyment.

The best preventive for gossip and tale bearing, the common recreation of the idle and the ignorant, and the bane of those good feelings and kind offices which sweeten and augment the pleasures of good neighbourhood, is to inculcate in early life, a taste for useful reading. Books remind us of our duties, instruct us in our business, and afford useful employment and recreation for the mind in hours of rest or of leisure; and when the habit of reading is once acquired, its pleasures and advantages become more and more perceptible and enticing, as we advance in useful knowledge. Those who employ their time in their own business, seldom find leisure or disposition officiously to intermeddle in the private concerns of their neighbors. But the mind is as liable to disease as the body, and a diseased mind is far more prejudicial to character and usefulness, than a sickly body. Evil communications corrupt good manners; and bad books or useless books, are as injurious to the mind and manners, as bad companions are, or as impure air, or obstructed perspiration are to the body. The adage teaches, that a man is known by the company he keeps, and the maxim is true, applied to books as well as men.

Having discussed the affairs of the family, let us now go to the farm: for, after all, our capacity for providing suitably for ourselves and familes, and of becoming useful to others, will depend in no small measure, upon the extent of our pecuniary means, and these means are to be acquired by the profits of our labors upon the farm.

I would premise in the outset, that the business of agriculture has not kept pace with the other useful arts, in the march of improvement, and that it requires all our exertion and enterprise to overtake the spirit of the age. In the other arts of productive labor, the improvement of the last fifty years have been greater in amount than during the preceding century. No man prospers in the mechanic or manufacturing arts at this day, who treads in the footsteps of his ancestors. By reason of the application of science, and the multiplication and great improvement in labor-saving machines, old practices have been superseded by new and better ones—all has been changed—all improved. A useful discovery in those arts is no sooner made in one country, or in one district, than a knowledge of it is disseminated, by means of the press, through every civilized land, almost with the rapidity of the wind, and it becomes known and adopted wherever it can be useful. But in husbandry, the case has been different. We have, to a ruinous extent, in many parts of the country, persevered in the practices of our fathers, which, though adapted to their time, and the circumstances of a newly settled country, are illy suited to an exhausted soil, or to the present age of improvement. We, too, must call science and the press to our aid, if we would successfully compete in the business of farming, with the well cultivated countries of the old continent, or the highly improved districts of the new one.

The agriculture of England has doubled its products in the last sixty years, and the agricultural productions of Scotland, have been more than quadrupled in the same period. In France, men of profound science have successfully devoted their talents to the improvement of the soil, and the government has efficiently aided their efforts, by the establishment of schools of practical and scientific instruction in husbandry, and by pecuniary aids to her agricultural societies. There, the soil has been improving under the *new* system of husbandry; here, the soil has been deteriorating under the *old* system. The lands of Flanders have been preserved in unimpaired fertility six centuries, and those of China for more than two thousand years. Providence has provided for us too abundant means for perpetuating the fertility of our soils, and has endowed us with capacities of applying them to advantage. We have received the talent. If we hide it, or do not put it at interest, the master will assuredly take from us that which we have, and give it to him who has already much. But the spirit of agricultural improvement *is* abroad in our land. The young farmer, in particular, feels its vivifying influence. It has already done much, and with the aid of agricultural societies, and of agricultural periodicals, which are increasing in numbers and usefulness, its benign influence will soon be manifest in every section of our country. We have the strength and enterprise of a young nation; and we possess advantages, and enjoy privileges, unknown to any other agricultural people upon the globe. It becomes us, then, to call promptly to our aid, the lights of science, and the diffusive influence of

the press, that we may realize the high destinies seemingly allotted to us by a kind Providence.

(To be completed in the next.)

NEW-YORK FARMER.

NEW-YORK, SEPTEMBER, 1837.

TO OUR PATRONS.

An apology is due for the unceremonious manner of suspending the publication of the work, in August last; yet we have no apology to make, except that the printer would not work unless he was paid; and we could not pay him, as some of our subscribers did not pay their bills; *therefore* the machine ceased to move—in consequence of which, many, and very *just* complaints have been made of *our delinquency;* but it is a singular fact that the majority of the complaints which have reached us, on account of the suspension, have come from *those who were indebted for more than a year;* whilst those who had paid up in advance to January, 1838, being themselves punctual, have in most cases evinced, by their forbearance to complain, a degree of confidence and kindness, for which we are truly grateful—as we also are for the means, after a long delay, to resume the publication.

For past favors we are truly thankful, and solicit a *continuance* of them—with the assurance, that if we receive prompt pay, the New-York Farmer will hereafter be regular in its visits to its *old*, and to as many as possible, new friends—whilst to those who do not consider it worth its price in advance, *or even at the close of the year*, it will cease to be a welcome visiter.

SMALL FARMS AND LARGE PRODUCTS—AGAINST LARGE FARMS AND SMALL CROPS.

It is a common remark, and more true than common, that farmers in general, in the United States, attempt to cultivate too much land, and therefore, as a matter of course, *do not do it well.* No person of intelligence, who travels through the interior, or even in the vicinity of large cities, will doubt the truth of this remark. There are few exceptions to this general rule, although of late there appears an increasing desire to obtain practical information from those who have wandered from the beaten track, making great efforts to improve their mode of cultivation, and then laboring still harder to convince others of their success, although success is evident to all, except to him who "has been all his days a farmer, and therefore, *ought* to know how to raise corn and potatoes."

The misfortune is, that a great majority of those who have been "always farmers," are content with what they have done, or witnessed among their neighbors; whilst they ought to seek for information from all parts of the country; and from older and more experienced countries, where a dense population compels the occupant of a few acres to improve his ground to the best advantage, in order that he may support his family. Instances occur in Europe in which large families are supported from half a dozen acres—and sometimes even from a single acre—as will be credited after reading the communication of J. L. L., in this number of the Farmer, giving the produce of his garden, which contained 3,552 square feet of ground.

The writer of that communication has been long known to us as a successful and honorable merchant; and we shall now cultivate his acquaintance, with the hope of obtaining further information from him in relation to his farming operations, notwithstanding they are "of only two years' growth," with the hope of inducing many others to turn their attention to the cultivation of some of the thousand unoccupied "farms," in this vicinity of equal size; it being only 100 *feet* in length, by 35 feet, 6¼ inches in breadth, or a fraction *less* than *one and a half* city lots.

With such industry and perseverance in the business department, such precision in keeping the accounts, together with such results in actual practice, we desire to ask some of our "old school" farmers, if there is not, after all, some good to be derived from "Book-Farming."

If any of our friends can furnish us with *greater* products, from an equal space of ground, we shall be happy to publish their statement, and award them a premium of ten dollars.

MANURES.

As success in cultivating the soil depends much on *Manures*, we ask for the articles on this important subject, especially the extract from "Dr. Granville's Report," the particular attention of all our readers who take an interest in the cultivation of the soil, or in the improvement in city economy to which the use of that manure will lead in this country.

CHEAP THRASHING MACHINES.

We observe by an advertisement in the New York Evening Star, that a Mr. E. Warren of that city has thrashing Machines, made in the strongest manner of wrought iron and wood, which are represented as not being liable to get out of order, and thrash all kinds of grain equally well, which he sells at from $20 to $40 a piece. Machines at $25 and $30 with one or two horses, will thrash from 80 to 160 bushels of wheat per day—those at $40 designed for large farmers, thrash from 200 to 300 in the same time. If those machines will do the work here represented, they certainly are cheap, for there is no more necessary implement on a farm, whether the economy of time or money be considered.

We have mentioned these articles with a view of asking our kind friend of the New York Farmer to ascertain and publish it in his next paper, what is the cost of the horse power by which these machines are propelled. If that be correspondently low, we should say that Mr. Warren will merit the thanks of the agricultural community. Although all acknowledge the superiority of the manner of getting out grain by a thrashing machine over that of the *flail*, or the more slovenly way of treading it out by horses, yet the expense of the former has hitherto deterred many small farmers from procuring one.

We find the foregoing notice and request in the Baltimore "Farmer and Gardener," of September 19th; and, although our "next paper" has been so long delayed that a reply will be useless for the present season, we give with pleasure all the information in relation to the Thrashing machine and horse power, of Mr. Warren, that we have obtained.

The Thrashing machine is very convenient, occupying little space, easily moved by two men—and we judge by its appearance, that it is well made. It appears, from a trifling experiment which we saw made last summer, to do first-rate work.

We have not seen the horse power of Mr. Warren, but have made some enquiry, from which we learn, that there are various opinions relative to its value. We have not satisfied ourselves, and therefore shall make further enquiry and refer to the subject in our next number.

EXTRAORDINARY PRODUCTIONS OF A SMALL FARM.

We are indebted to a distinguished member of the legal profession for the following communication written by friend of his, who, in addition to an extensive and profitable business carried on in this city, finds time to cultivate a

miniature farm—and it may also be considered a *model* farm—in New Jersey.

This statement, which may be relied on, of the products of 3552 *square feet*, which is a fraction less than *one and a half* city lots, or a *farm* 100 feet long by 35 feet 6¼ inches broad, shows what *may* be accomplished by those who believe *in*, and have the industry to practice *upon*, "*book* farming." It teaches a lesson worthy of being studied and practised upon by thousands in, and in the vicinity of, this city, and elsewhere. We shall endeavour to obtain further details in relation to these extraordinary productions, for the purpose, and with the hope, of inducing others to profit by becoming "farmers" on a similar scale, or larger if they choose. If they will manage as well in proportion as J. L. L., the writer of this communication has, and furnish us for publication their annual report, we will place the result on record without fee or reward:

Hoboken, Dec. 11th, 1837.

To J. Anthon, Esq.

Sir—Agreeable to promise, I enclose you the result of my last season's cultivation, ending at date; also a statement of the cost and keep of domestic animals, &c.

I uniformly look well to the result of all my undertakings, but the gain from one cow exceeds my most sanguine expectations; and it is a confirmation that whole families of the peasantry in Europe are supported chiefly on *one* cow. I will say nothing of the luxury of *pure* fresh milk and butter, as I know you have them in abundance, but hereafter I shall never be without one of those most useful animals. I shall take another opportunity of showing you that pure milk is not "feverish," but that from neglect and starvation the poor cow may become fevered, and thus affect her milk.

You will perceive that the *vulgar* pig is the most profitable; this accounts for the poor man's habitation being surrounded with them. However, my pigs were penned and fed on pumpkins and corn.

The fowls, owing to the high price of corn and grain for two seasons past, are not so profitable, but they are of the Sicilian breed, as big as turkies. Not having bought vegetables (except potatoes) for two seasons past, I do not know what price to attach to my produce. Will you put the market price to each, and strike a balance, this will enable us to estimate the value of a well cultivated farm of 20 to 50 acres.

My outlay for seeds and plants is just $3 50. The labor is my morning and evening's exercise, with the assistance of my cow-boy in weeding and digging.

It would be an idle boast to rise with the sun, to plant cabbages and raise turnips, but if I can produce choice wholesome fruit and vegetables *out* of season, in our climate, then I may flatter myself that I have made my "blade of grass grow where none grew before."

I fattened pigs to obtain three results.

1st. Furnish to my household good wholesome food.

2nd. Save money in my expenditure.

3rd. Obtain manure, which is not to be got where I am, unless at a heavy cost.

I will here state that my vines are quite young. I did not think it prudent to allow all the fruit formed to remain, another season, I estimate my crop of grapes at three fold. As you have seen during the past season, samples of the principal of my fruit and vegetables, I will add a few more that you have not seen. I should also send you some choice cauliflowers, but I understood that you had an abundance.

In regard to my butter-making experiment, thus far I am successful; but I will lay no claims to the "Medal," until I get through the three next months—they will be the most trying.

In making comparisons with the result from my *miniature farm*, you must make due allowance, that I am a farmer of only two seasons.

The sample of butter I now send you, I think is as fine as any made during the summer.

I also send you a taste of sausages made on my *farm* from my pig: if you eat sausages, you must compare, by purchasing some in the market.

I shall try the experiment of making Westphalia hams from my pork.

Also bacon that shall look like a cherry when you cook it.

Yours respectfully, J. L. L.

Statement.

3552 square feet of ground under cultivation produced in one season the following in four crops:

First Crop.

Lettuce, cart loads,	2
Radishes, bushels,	1
Pepper-grass, chives, etc.	

Second Crop.

Green peas, bushels,	3
French beans, do.	2
Early cabbages, heads,	210
Cucumbers, bushels,	1
Cherries, do.	2½
Pot herbs of every kind.	

Third Crop.

Sweet corn, bushels,	2
Yellow and white flint, bushels,	1
Lima and Cranberry beans, do.	3½
Squashes,	70
Okra, bushel,	½
Onions, do.	1
Leeks, do.	½
Tomato, do.	3
Pumpkins, average 17 lbs. each	53
Beets, bushels,	2
Carrots, do.	½
Nasturtium (for pickles,) gallon,	1
Pears (bad season,) bushels,	1½
Grapes, golden Chasselas, average ½ lb. each bunch, bunches,	33
Grapes, Isabella, average ½ lb. each bunch,	80
Gooseberries, currants, etc.	

*Fourth Crop.**

Cauliflowers, heads,	50
Celery, do.	75
Scotch kail, do.	50
Ruta-baga, 3500 plants expressly for the leaves.	

Statement of the cost and keep of a cow, with an account of her produce:

Dr.

April 1836, to Dec. 1837.	Cash paid for cow,	$20,00
	Do. for hay,	42,00
	Do. corn meal,	20,00
	Do. pasture,	12,00
		$94,00

Cr.

April 1836, to Dec. 1837.	By 225 lbs. butter, 28. per lb.	$56.25
	Calf sold for	12,00
	Milk for house estimated at 2 quarts per day,	45,50
	Cash rec'd for milk sold, chiefly butter milk,	147,25
		$261,00
	Deduct	94,00
	Gain on cow,	$167,00

Statement of the cost and keep of 2 pigs:

Dr.

Oct. 1837,	Cash paid for 2 pigs,	$10,00
	Do. for corn meal,	2,00
		$12,00

Cr.

Dec. 1837.	By 160 lbs. pork, 8 cents per lb.	$12,80
	By 7 pigs fit for table in 3 weeks,	14,00
	By 1 sow, value	12,00
		$38.80
	Deduct	12,00
	Gain on 2 pigs,	$26,80

Statement of the cost, keep, and produce of 3 pair chickens.

Dr.

Sept. 1835, to Dec. 1837.	Cash paid for 3 pair chickens,	$ 2,50
	Do. for oats, corn, etc.	57,25
		$59,75

Cr.

Sept. 1835, to Dec. 1837.	By 2500 eggs 12d. per doz.	$26,62
	By 143 fowls,	71,50
	On hand 16 do.	8,00
		$106,12
	Deduct	59,75
	Gain on chickens,	$46,37

* The whole of the fourth crop is now at this time growing in the open air, except the cauliflowers, which have been taken up, from time to time.

From the Genesee Farmer.

FARMING IN MICHIGAN, &c.

Mr. Tucker—Having been a reader of the Farmer these two years past, I feel it my duty at least to give my testimony in favor of such publications, knowing that I have derived much benefit from a perusal of the Farmer. Although circumstances prevent my entering fully into, or testing all the various experiments and improvements recommended in it, yet I find great advantage in adopting, even partially, much of the advice given in it. I am a practical farmer, and have pursued until recently, a course of experiments, almost exclusively original, and have succeeded in making many improvements upon the common course of farming. I have always been aware that manures and plaster were very beneficial to crops; but not knowing their properties, as ascertained by chemical operations, I have used them, as I presume many others do, promiscuously or at random, thus losing a great share of the benefit that otherwise might have been derived from their use; and I am sensible I have lost many crops by putting them on soils not adapted to their growth, and not knowing the cause of failure, have repeated the experiment with the same ill success. All of this for want of a knowledge of the chemical qualities of soils. Although the study of agricultural publications may not answer fully the want of personal knowledge upon these subjects, yet enough can be learned by the common farmer, if put in practice, to render his agricultural pursuits more sure of success. Every farmer ought to understand Chemistry, and I think the time is not far distant when its study will be thought as indispensable for the farmer as common Arithmetic. I hope soon to see it, with a full system of farming, introduced into our common schools. The reasons I have mentioned are of themselves sufficient to recommend the Farmer, or some other agricultural publication, to the notice of every farmer. But there is much more in the Farmer besides the analyzing of soils, manure, &c., which attracts my attention, and the perusal of which proves interesting and useful to me, such as the results of experiments on the various modes of Agriculture—the various modes of preparing seeds—times of sowing and planting—hints and remarks upon feeding and fattening cattle and swine, and taking up the volume for a year I find something interesting and instructive upon all the concomitant circumstances of farming. I have been one of those opposed to book farming, and my prejudice was only removed by reading the *Farmer*, and so much are my views changed on the subject, that I would not now forego the privilege of reading a periodical publication on this subject if I had to pay $5 instead of 50 cts. for one.

As I find myself gratified by reading statements of practical farmers on various subjects connected with their business, I will give you the result of my own experience in growing some crops the past season. I will commence with my wheat, as that is the staple article with me. I sowed 20 acres on fallow ground, which was plastered in the spring, and then ploughed most of it three times, a thick growth of white clover being ploughed under; sowed 1¾ bushels to the acre; plaster was sowed upon the wheat in the spring again; and notwithstanding its unfavorable appearance from the hard winter, I harvested a good crop, ranging from 20 to 30 bushels per acre. I also sowed about fifty acres on wheat and oat stubbles, ploughed at once—harvested about 10 bushels per acre, as much as any one ought to have from such husbandry.

Oats were an excellent crop here this season.

Owing to the successive failure of the corn crop for several years past, very little corn was planted here. I planted about 2 acres—rows 4 feet apart, hills 1½ feet, in light drills—put plaster into the hill before covering—tilled with the cultivator, no earth around the hills—got something over 50 bushels to the acre.

My potatoe crop was a mixture of experiments. I raised over 1500 bushels. Some I planted in drills, some in rows one way, hills 18 inches apart the other, and some rows both ways 3½ feet apart; some I manured in the drill, and over some of the ground I spread manure. I think the most benefit is to be derived from manure on potatoes by spreading it and ploughing in. Where I manured in the hill, I had the best potatoes, where the manure was put in first, though this part of the field looked very unpromising for several weeks, being very slow in rooting. I had about 300 bushels to the acre. I should have had several hundred bushels more had I used different seed, a large proportion of which were the pink-eyed, which will not yield more than two-thirds as much as the orange, flesh-colored or Philadelphia. In the culture of my potatoes, I used the cultivator, followed with the hoe to cut up what weeds were left. No earth drawn around the plants. I went through them twice in this way, which left them very clean. I am well satisfied that this mode of culture is altogether better than the old way of ploughing and hilling.

I have this season for the first tried the Ruta Baga crop. I sowed, as I find by after measurement, 115 rods ground, in an orchard, trees so large as to injure the crop materially; sowed in drills 20 inches apart—ground prepared by spreading five loads long manure, and deep ploughing and draging—drills marked by hand, and seeds sowed from the thumb and finger, and covered with a rake head—went through them once with a hoe, and then sowed on them one bushel of plaster, broad cast. The whole operation together with seed, rent of land, and securing the crop, cost me $25,81. When gathered, I had 533 bushels, which reckoning them at 20 cts. (as I have seen them estimated in some calculations of this kind) would amount to $106,60, showing a profit of $80,79. I think the plants were left too thick when they were hoed, being not more than from 6 to 10 inches. If they had been left 12 inches I think the crop would have been much better. I am however so well satisfied with this crop that I think of going into the culture quite extensively next season.

MICHIGAN.

Bloomfield, Oakland Co., Michigan, Dec. 5 1837.

From the London Farmer's Magazine.

ON WASHING TREES.

To the Editor of the Mark Lane Express.

Sir,—I observe in your paper of this week an article upon the washing of forest trees, wherein you neither mention what they are to be washed with, nor in what manner it is to be done. I beg, therefore, to inform you that I have been making experiments in the washing of trees for these eight years past.

In the year 1827 I planted a small strip to make an experiment with the undermentioned kind of forest trees:—elms, ash, plane, sycamore, chesnut, walnut, poplar, laburnum, Scotch fir, larch and lilac. When planted two years, moss began to grow on all but the laburnum. I had them washed in the month of October with lime water, putting a lime shell about the size of a half quartern loaf into a pailful of soft water, mixing to about the same consistency as is used to whitewash the ceilings of rooms, and putting it on with a whitewasher's brush. In the spring of the following year I found the bark free of moss, and the trees quite healthy. I have continued washing them every second year since that time. When planted, they ran from three feet and a half to five feet in length. There are many of them now about twenty feet in height, and two feet in circumference at a foot from the ground. Eight years ago I planted two fruit trees in my garden to make an experiment. In the second year I found them beginning to get mossy, the same as the forest trees; since which time I have washed one of them every October in the same manner, the other I have done nothing to. When planted they were both exactly four feet high and three inches in circumference each. The height of the one that has not been washed for these six years is now six feet four, and the circumference seven inches and three quarters. The height of the one that has been washed is ten feet five inches and a half, and the circumference is ten inches and one quarter, which, in my opinion, is a certain proof the utility of washing with lime-water.

You may insert this in your paper, provided you think it entitled to a corner in it. A woman can do a hundred of them a day of that size. The wages here are tenpence, and the expense of the lime about fourpence.

I am, sir, your most obedient servant,

George Pringle.

ON THE ADVANTAGES OF USING LIQUID MANURE FOR THE GROWTH OF PLANTS.

Few things in the management of plants, are more overlooked than that of applying liquid manure. When the roots of plants are confined within a garden pot the soil soon becomes exhausted; and if it be desirable to grow the plant rapidly, it must be turned out of the pot, and the exhausted soil taken from the roots, and replaced with fresh earth, or recourse must be had to liquid manures. Floriculturists cannot be aware of the advantages of applying manure in a liquid state, or it would be more frequently used. I have found that all free-flowering plants, such as Petunias, Geraniums, some of the Calceolarias, Balsams, and Cockscombs, are improved, and indeed I have not found any flowering plant whatever that has not been benefitted by a greater or less quantity of this element; many New Holland plants are increased in vigour by this treatment; even the Epacris, Diosma polygalla, and many others, besides not a few of the heaths, are benefitted, when it is occasionally applied, as, for instance, once every seven or ten days. In watering plants with liquid manure it will be observed, that the soil, after having been watered a few times, does not dry as soon as when watered with clear water, and this independent of the extra nutritious qualities left in the soil by the application of manure water; it is, then, a great point gained, by whatever means effected, when plants, whether in pots or in the natural soil, can be cultivated without the necessity of frequent waterings. As there is no more labour required in using manure water, than in applying the same quantity of water without any mixture of manure; considering too, that its advantages must be obvious to all who give it a fair trial; it does seem somewhat unaccountable to see persons exerting a great amount of labour to accomplish very small results. It must be regarded as so much labour misapplied, when, had half the same labour and attention been bestowed, using at the same time liquid mauure, far more satisfactory results would have been obtained.—*Floricultural Magazine.*

OBSTRUCTION OF THE PYLORIC ORIFICE OF THE STOMACH OF A HORSE BY BOTS.

By Mr. Samuel Goodworth, Great Driffield.

(From the Veterinarian.)

A horse appeared to be ill, exhibiting all the symptoms of gripes.. The person to whom he belonged was a poor man, who attributed his illness to his having eaten some sour grass on the night before, being out on a journey with him. He perceived him to sweat a great deal more than he was accustomed to do in his work, and thought that he should not have been able to get him home. He at last got him to his own residence. A surgeon living a few doors from him, the horse was taken there and bled, and a cordial ball was given to him: very soon afterwards he died. The surgeon came, and begged to have my assistance in the post-mortem examination: he said the horse had died very suddenly, and that he felt a great desire to know the cause of death. I questioned him as to his opinion of the disease; and he said that he took it to be a common case of gripes, for the horse perspired a great deal, and laid himself down and rolled on his back.

They got him up, and endeavoured to walk him about, but he was soon down again, and lay tumbling until he died.

Post-mortem examination.—On opening the abdomen, the first thing that we perceived was a ruptured diaphragm and a dreadfully distended stomach. We had at once sufficient cause of death. All the other viscera were apparently healthy.

I made an incision into the stomach, to try whether he could find the cause of distention. In examining the pyloric orifice, I found it obstructed by a cluster of bots; so much so that it was impossible for the food to pass into the intestines. The bots, then, had caused the obstruction, and the obstruction the distention; and the horse being compelled to work in that state, the diaphragm had been ruptured by the pressure of the full stomach, and death had followed.

If you think this, to me, novel case, worth a place in your valuable journal *The Veterinarian*, you will oblige me by inserting it; for I feel much interest in its prosperity, as connected with the improvement of the veterinary art.

THE OLD AND NEW SYSTEM OF FARMING COMPARED.

In Mr. M'Culloch's valuable and elaborate satistical work, lately published, we find an interesting account given of the difference in the mode of cropping in the "good old times" and the present "bad times;" it is from the pen of Mr. Oliver, of Lochend, an intelligent and practical farmer.

"The mode of cropping at the former period (1723) was, first, peas; second wheat; third, barley; fourth, oats; the produce being about three seeds, but to prevent all cavil, say four seeds. This, taking the seed for each at 1 boll (or about four bushels of wheat and six of barley) over a farm of 100 Scotch acres, is 400 bolls. The quantity of straw for each of such crop could not exceed 15 stones; which on 400 bolls gives 6,000 stones, or 42 tons 15¼ cwts. of straw, to be consumed by the stock and returned to the land in the shape of manure. But upon a farm of 100 acres, cultivated as at present; namely, a fourth turnips, a fourth wheat or barley, a fourth clover or rye-grass, pastured or made into hay and consumed on the farm, and a fourth oats or wheat; the account would stand thus:—50 acres of wheat, barley, and oats, at eight bolls per acre, which we are convinced, is not above the average crops of the best district of East Lothian; this, allowing as above, 15 stones of straw for each boll, gives 120 stones per acre, which over 50 acres, makes in all 6,000 stones of straw, or 42 tons 15¼ cwts., being equal to the quantity produced by the whole 100 acres under the old system. Now suppose that the 25 acres of clover and rye-grass are made into hay (which, however, is not the mode practised, nor the best mode of obtaining the greatest quantity of manure, and keeping up the fertility of the soil,) and that each acre yields 200 stones, the total quantity will be 5,000 stones, or 35 tons 411-10th cwts.; and add to this 500 tons turnip, being the produce of 25 acres, at 20 tons per acre, which is by no means above a fair average crop. Upon these data, the weight of materials produced annually for manure under the old and new systems will be as follows:—

Old System.

Straw	6,000 stones,	42 tons	15¼ cwt.

New System.

Straw	6,000 "	42 "	15¼ cwt.
Hay	6000 "	35 "	141 cwt.
			cwt.
Turnips	70,000 "	500 "	

Thus making the weight of materials to be converted into manure under the new system, in round numbers, 577 tons; while under the old system the quantity is only 42 tons, leaving a balance in favor of the new of 533 tons per annum, being *more than twelve times the whole quantity produced under the old!* Nothing more is necessary to show the superiority of the new system, in as far as *keeping up the fertility of the soil* is concerned; and upon this depends the progress of agriculture. And as to the question of comparative profit, it would be easy to show, from unquestionable data, that the new system is as superior to the old in this respect, as it is in the supply of manure; but this, we think, must be abundantly obvious to every one who contrasts the almost imperceptible advances made in agriculture, and in the accumulation of agricultural capital, for many centuries, with their extraordinary progress during the last seventy years, or since the new system was introduced.

THE MARRIED AND UNMARRIED.

Some very curious facts on the subject of marriage, as connected with longevity, are stated by Dr. Casper, in a paper of his lately published at Berlin. It had been long ago vaguely asserted, that bachelors are less long-lived than married men. Hufeland and Deparcieux were of this opinion; and Voltaire observed that there were more suicides among those who had not given hostages to fortune than among those who had. Odier, however, was the first who set on foot the inquiry with exactitude, and he found (Bibl. Britannique, 1814) that, in the case of females, the mean duration of life for the married woman of 25, was about 36 years; while for the unmarried it was about 30½. At 30 there was a difference

of four years in favour of the married; and at 35 two years, and so on. It may be said, perhaps, that married females ought to be considered as picked lives; but, as Dr. Casper observes, this is far from being generally the case, especially in the middle and upper classes of society: it is chiefly among the lower orders, where a livelihood is procured by labour, that importance is attached to the bodily health and vigour of the female. With regard to men, we gather from Deparcieux's and the Amsterdam tables, that the mortality of those from 30 to 45 years of age is 27 per cent. for the unmarried, while it is but 18 for the married; and that for 41 bachelors who attain the age of 40, there are 78 married men. The difference becomes still more striking as age advances; at the age of 60 there are but 22 unmarried men alive for 48 married; at 70, 11 bachelors for 27 married men; and at 80, for the 3 bachelors who may chance to be alive, there are 9 Benedicts. The same proportion very near holds good with respect to the female sex; 72 married women, for example, attain the age of 45, while only 52 unmarried reach the same term of life. Mr. Casper, in conclusion, considers the point as now incontestibly settled, that, in both sexes, marriage is conducive to longevity.—*Journal of Agriculture.*

POTATO EXPERIMENT.

The following account of an experiment on renewing the constitutional vigour of the potato, was sent to us by Mr. George Sime, parochial schoolmaster of North Berwick, under date of 17th August, 1837. It would be desirable to know afterwards how the new varieties stand cultivation.—E. Q. J. A. "Owing to the partial failure of the potato crop for several years past, it became an object of importance to try experiments with the view of restoring the constitutional vigour of that excellent esculent. Last year Mr. Arthur, gardener at North Berwick Lodge, noticing a field of thriving potatoes, of sorts, in his neighbourhood, bestowed considerable pains in crossing the strongest and most approved varieties in the field, and afterwards carefully collected the seed. The seed thus collected was sown early this season, and the plants thus produced were in due season transferred to new ground, on which potatoes had never been grown. The crop, which covers more than a quarter of an acre, has the most promising appearance, the stems being nearly as strong as the best fields in the neighbourhood grown from sets. From the pretty extensive scale in which the experiment has been made, and the scientific manner in which it has been conducted, it seems well deserving the attention of the agriculturist, as a great number of new and important varieties may be obtained, no two stems exhibiting the same characteristics.—*Quarterly Journal of Agriculture.*

VINEYARDS IN LYONS.

Those who are inclined to the opinion that our soil and climate are not adapted to the successful cultivation of a great variety of choice wine and table grapes, had better look for themselves at the vineyard cultivated by Samuel Hecox, Esq., in this village, and they will be satisfied of their error. The vineyard lies on the eastern slope of a hill of easy ascent, and covers an acre of ground. The vines are set in rows, at twelve feet distance each way, and are each sustained by a separate trellis about six feet in height: they are literally loaded with large and beautiful clusters of tempting grapes. It makes one's mouth water to think how delicious they will be when they are fully ripe.

Among the varieties of grapes cultivated by Mr. Hecox are the following:—Black Scuppernong, Catawba, Sweetwater, Grey Burgundy, White Seedless Corinth, Muscadel, Red Swiss, Orwisbugh, Petit Rauscheling, Frankenthal, Miller's Burgundy, Bullet Grape, Denistons Fragrant, Tokay, Isabella, Elsingburgh, Bland's Virginia and Golden Chasselas—though the vineyard abovementioned is confined chiefly to a small number of the hardy kinds. We are highly gratified to witness the success attending this experiment. Our citizens can never know what capabilities our comparatively new country possesses to produce the choice fruits of the earth, unless men of enterprise, capital, skill and taste, will take the trouble to ascertain by actual experiments. The process and results of all such successful undertakings should be carefully noted, and commended to the favourable notice of the cultivators of the soil throughout the land.—*Lyons Argus.*

CHARCOAL FOR HOGS.

Mr. Tucker—Every means of saving food in fattening hogs, seeing that fresh pork is so cheap in comparison with the price of the fattening material, should be known by the farmer. Those are on the right side of the hedge who sold their hogs on foot for from 3½ to 4¼ cents per lb., which most or all could have got. Unless the owner has damaged grain, which he does not know how else to dispose of—soft corn for instance, or shrunk rusted wheat, it is ruinous work to fat and sell pork for 5 or 6 cents, which is all they now offer. The hogs will eat their heads off in a twinkling, at least as far as my experience goes. I would strongly advise all my brother farmers who can, to salt their pork themselves. Use the coarse bay salt, and pack down before it freezes, and there is no fear of its spoiling.

I took up my pen to recommend to my brother farmers the more general use of charcoal in fattening their hogs. I know it has often been recommended in your valuable paper, and I know too that it is seldom attended to. We all know that charcoal is mostly carbon. Now hold a piece of glass over a candle and see what a quantity of the *pure article* you get from fat. Lamp black is very pure carbon. With regard to the hogs eating it, I give mine, 25 in number, about half a bushel a day, and they leave their corn for it, munching it with the utmost zest. May it not be a remedy for those intestinal worms which are found so generally about the kidneys of hogs? I recollect reading of a hog that was a great favourite with the crew of one of our vessels, and suffered to run about the deck. One day he was missing, and as every one supposed that he had fallen overboard, no great search was made. About two weeks afterwards the cook had to go down to the coal-hole for a supply of coals, where he found his hogship, both fat and flourishing, with nothing within his reach but the coals.

The first opportunity I will describe an exceedingly pretty and convenient apparatus for steaming potatoes and other roots, and the most approved plan of a hog-pen.—*Geneva Journal.* K. A.

CLARK CORN.

Mr. R. Jaques, of Newberry, (Mass.) describes in the N. E. Farmer, a variety of corn known by the above name, which he received from Barnstead, (N. H.) as follows:

I have planted of it three years. The land on which I raised my best corn this season, was grass land, 3-4th of an acre, broken up the 10th of May, about seven inches deep; harrowed and manured in the hills, with rotten stable manure; about 3000 hills to the acre; a common shovel full of manure in each hill, but it will answer to put more hills on an acre. It was planted 12th of May, and was hoed twice. I put 5 kernels in each hill, without soaking. Usually there were 2, 3, and some hills 4 ears on a stalk. The land was brown loam, southerly ascent, 5 or 8 degrees. The corn was ripe the first part of September, and might have been gathered by the 25th. In good seasons, I think it would have yielded 60 bushels to the acre.

SELECT THE FIRST RIPE SEED.

In the 3d volume of the N. E. Farmer, p. 60, was published "an experiment showing the importance of selecting the first ripe seeds," communicated to the Trustees of the Massachusetts Agricultural Society, Sept. 1, 1805, by James Freeman, from which the following are extracts:

"To ascertain whether the ripening of seeds can be forwarded by sowing those which are earliest, I have made experiments, all of which have been successful, and on several different sorts. It will be sufficient to mention one only.

"In the year 1801, I planted the case-knife bean. The pods first formed, which are commonly those nearest the root, were reserved; and when the quantity of a peck was fully ripe, the were gathered on the same day. The largest and

fairest of the seed were planted the next year, and the first formed pods reserved as before. The same method has been pursued without any variation, till the present year; by means of which, whilst the bean has not degenerated in its quality, the ripening of the seeds has been forwarded 26 days, as will appear from the following table:

	Planted.	*Gathered.*	*No. days.*
1801	May 20,	Sept. 9,	112
1802	May 11,	Aug. 21,	102
1803	May 8,	Aug. 8,	90
1804	May 11,	Aug. 4,	88
1805	May 6,	July 31,	86

The first column denotes the time of planting the seeds; the second that of gathering the seeds, which were first ripe; and the third the number of days which had elapsed between the time of planting and the time of gathering."—*N. E. Farmer.*

AGRICULTURAL SOCIETIES.

There is no better way of convincing the incredulous of the beneficial influence of Agricultural Societies and Agricultural Journals, than by the exhibition of facts in relation to the improvements which these combined influences have already effected. In a debate on a bill to renew an act for the "Encouragement of Agriculture," the Rev. M. Allen in the Legislature of Massachusetts, said—

"It has already been suggested that the soil of the county, from which I came, is not the most favourable for agricultural pursuits. The expense of cultivation there is thought by some to exceed the amount to be derived from it. This was the prevalent opinion before the introduction of modern improvements. The operations of an Agricultural Society have proved that labour and skill can make even despised soils productive. I suppose that ten bushels of rye to the acre, twenty of Indian corn, one ton of English hay, and two hundred bushels of potatoes were formerly considered as average crops. Since premiums have been offered, we have claims for from forty to fifty bushels of rye, from one hundred and fifteen to one hundred and twenty-two of Indian corn, from three to four tons of English hay, and from four to five hundred bushels of potatoes. Our improvements have not been confined to single acres, in several instances the products of entire farms have been more than quadrupled."

FARMERS LOOK AT THIS!

Buckwheat Straw.—A correspondent who signs himself "A Yankee Farmer," asked us whether any use can be made of his buckwheat straw. Our reply is, that it is better for milch cows than the best timothy hay—that his cows will eat it with great avidity—that if it has not been exposed to long too the vicissitudes of the weather, it will prove equally nutritious to them—that, so far as the secretion of milk is concerned, it is infinitely preferable to any hay or fodder within our knowledge—and that, when eat, or boiled or steamed, it makes most acceptable slop for cows. We will say, further, that the old plan of throwing this nutritious provender upon the dung-heap, should be abandoned, and henceforth it should be permitted to assume its proper rank among the choicest hay for neat cattle.—*Baltimore Gazette.*

ON THE USE OF GYPSUM.

Walter Beecher, of Madison County, in a communication published in the Memoirs of the Board of Agriculture of this State, gives the following instance of the beneficial effects resulting from the use of Plaster or Gypsum:

Some years since, I purchased about ten acres of land, (the timber of which was oak, and the soil of a chocolate colour,) that had been ploughed constantly every year for twelve years. The crop of wheat was on it at the time of purchase, did not yield more than twelve bushels to the acre. In the spring, I seeded it with clover, after which I sowed one hundred weight of plaster to the acre, and the pasture that season was excellent. After having sown the same quantity of plaster to the acre for three years, I ploughed the land very deep in the month of June, and having ploughed twice afterwards, I sowed one and a quarter bushels to the acre of wheat, and harrowed it twice. My wheat, the next year, yielded forty bushels to the acre. I have continued sowing plaster every year for four years, and my pasture has been excellent, and not surpassed by any in the county; the land is in good order and in a high state of cultivation, resulting from the important use of plaster.

I have used plaster on all or almost all kinds of land; on dry land it answers a good purpose; on land that is worn out it is the most essential; on moist or muck land, (as it is called) plaster will be of no use until the muck is worn off; on dry sandy land, and in dry seasons, the plaster is of the greatest importance.

ON THE CULTURE OF RUTA BAGA.

As the ruta baga and all other root crops are gaining, especially in this country, I will give you the result of my experience. I have raised the ruta baga more or less for seven years past. My usual way has been to sow on new timbered land, without ploughing. I have succeeded some years admirably, and some not so well. I have never attempted a crop of turnips that would not have cleared me $25 per acre. Some years the crop has cleared over $100 per acre.

I propose to give you the result of 1¼ acres that I have received this year. The field was wheat stubble, timbered land, which was not ploughed for the wheat crop; the soil a black sand mixed with loam. The piece was ploughed in the spring, then left until the first week in June; it was then plouged and harrowed, the roots, &c. cleaned from the ground, and four ounces of seed sown broad cast and well harrowed. After they got into the rough leaf, they were thinned and cleaned from weeds. This was all the cultivation, with the exception of a few hours in August, pulling weeds around stumps, &c.

The result was, 1 gathered 800 bushels, at 15 cts.,	$120 00
Dr. to expense preparing ground and sowing,	6 60
" 4½ days weeding and thinning,	4 00
" 6½ days gathering,	5 00
	$15 60
The nett proceeds of 1¼ acres of land,	$104 50

No farmer should be wise in selling turnips at the price stated above. I count them equal to corn in the ear, that is, a bushel of turnips are equal to a bushel of ears of corn.—*Genesee Farmer.*

From the Genesee Farmer.

SETTING MILK FOR CREAM, &c.

Mr. Tucker,—Having found much satisfaction in reading the communications of others in the Monthly Genesee Farmer, I have concluded to offer some of my experience in the great field of Agriculture. And first, I will state my plan in setting Milk for Cream, which I consider much more convenient than the common way. My first education in this respect, was, of course, to set the milk in broad shallow pans, so that it would stand thin as well as cool; but about ten or twelve years ago my milk became too plenteous for my pans, and I was driven to the necessity of setting my milk in high earthen pots, such as we use to keep cream in. When we commenced this operation, I told my wife that we should get but little cream from those pots; yet we had no other way to save our milk. But to our surprise we found the high pots to produce as much cream in proportion to the quantity of milk as any other vessels. Encouraged by this result, we adopted the plan of setting our milk in common 8, 10 or 12 quart tin pails, which would occupy but little room even for the largest dairies. We found these pails much more convenient, being much easier skimmed, and easily removed from place to place by the bails. Ever since we commenced this practice, our butter has commanded the highest price in market, and we have proved beyond all doubt that the cream will rise as perfectly 10 or 12 inches deep as in any other way.

Another circumstance it may be proper to mention. Having found some difficulty by reason of some of my cows in the latter part of the summer, refusing to give their milk freely in the morning, so that I could get their milk but once a day, which dried them up very fast, I sought for a long time for a remedy by reading and conversing with my neighbours, but no remedy could I find, until at length, instead of salting my cows

twice a week, I furnished myself with a box about six inches square in the clear, into which I put a handful of salt, and took it every morning with my pail, letting the cow partake of the salt while I was milking. I have continued the practice, salting all my cows every morning, and besides effecting the cure of their holding up their milk, I find that they give an increased quantity, so that I consider myself richly rewarded for the extra trouble. ELIAS SPRAGUE.

North Boston, Erie Co. Dec. 18, 1837.

PROPAGATING APPLE TREES.

A new plan for increasing plantations of apple trees has lately been carried into extensive practice by the horticulturists of Bohemia. Neither seed nor grafting is required. The process is to take shoots from the choicest sorts, insert them in potatoes, and plunge both into the ground, leaving but an inch or two of the shoot above the surface. The potato nourishes the shoot, while it pushes out roots, and the shoot gradually grows up and becomes a beautiful tree, bearing the best fruit, without requiring to be grafted. Whatever may the success of the undertaking, its novelty at least is an inducement to give it a fair trial.—*Journal of Agriculture.*

MELONS GROWN OVER WATER.

At the last meeting of the Horticultural Society, amongst the fruit from the gardens were two melons, grown over water, into which the roots descend, a plan by which it was found that this fruit would arrive at earlier, if not at better maturity.

CHILDREN.

A bill has been introduced into the Legislature of Pennsylvania, providing for the education of children, which is very important to factory owners, and is alike interesting to the poor and the rich. The following is an abstract of the bill:

"That no child of a less age than ten years shall be employed in a factory.

That no child of a less age than sixteen years shall be allowed to labour more than ten hours per day.

That all children employed in factories, not sufficiently well educated to be able to read, write, and keep an account, shall be sent to school at least three months in each and every year, while they are so employed, or until they are so far advanced in the rudiments of education as above mentioned."

Penalties are imposed on parents, guardians, or other persons, having charge of children, who neglect or refuse to comply with the above requisitions.

Penalties are also imposed on employers, for employing or allowing to be employed in their factories, children who come under any of the above mentioned provisions.

From the Railroad Journal

IMPROVED TURN-OUTS.

We acknowledge ourselves indebted to the writer of the following communication, describing the improved *turn-out*, now in use on the Liverpool and Manchester Railroad.

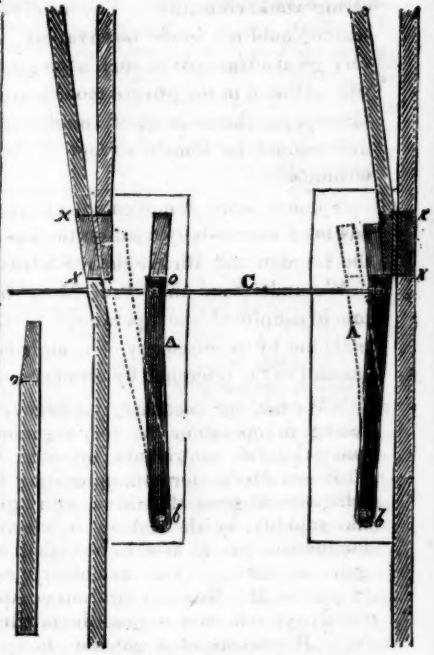
To the Editors of the Railroad Journal:

GENTLEMEN—The frequent occurrence of dangerous accidents on Railways, produced by the trains running off the track, which in most instances is caused either by neglect, or inaccuracy, in the working of the switches in turn-outs, induces me through the medium of your Journal, to suggest to Engineers and Railroad proprietors the adoption of the following plan of working turn-outs, lately introduced on the Liverpool and Manchester Road, by which all possible accidents from this source are avoided, and even the grossest neglect of the attendant, or wilful derangement of the switch, cannot jeopardize the lives of passengers, or the safety of the engines and cars.

The present method of changing the direction of the engine and train from one track to the other, is to have the rails moveable for a distance of about 15 feet, and to make this line of rails serve in common for both tracks. Thus, one track is at all times interrupted, and consequently, the train liable to run off, if by accident or neglect, the switch should not be exactly in the right position.

The accompanying sketch of the new method shows that the lines of rails in the main track, as well as turn-out, are perfectly *uninterrupted*. The change of direction of engine and train from one track to the other, is effected by two guides, AA, moveable upon hinge bolts, *bb*, and connected by the rod C, which passes under the main rail, and is worked by a simple lever, as in the present system. That portion between the letters *xx*, where the rails approach each other within 1½ inches, so as to allow a free passage for the flanges of the wheels, should be made in one casting; the joints of the inner two rails, against which the guides close, should not be less than half an inch wide, and may be made of cast steel.

The guides must be of wrought iron. 2½ inches wide, 4 inches thick, and about 5 feet long. The top of the guides must be level with the top of the rails; but from the point *o*, where they close against the casting, they should taper down in a distance of 9 inches, to 2¼ in. thick, leaving the ends of the guides 1⅞ inches below the top of the rails—(see section of the guide). The object of this is, that if the train should come down on either track, and the guides by neglect or accident left so as to close it up, then the flanges of the engine and carwheels on one side would gradually mount on this incline, and passing over the guide drop again between it and the main rail, and thus regain the track without in the least endangering the lives of the passengers, or the safety of the engine and cars. The cost of working turn-outs in the manner described, differs but little from those now generally in use.



The advantages of this new method over the old are too palpable to require further comment; and I have no hesitation in saying that it would be a good economy on any Railroad already in operation, to adopt this plan, for one accident caused by the other, would involve a Company, probably, in more expense, than a change of all the turn-outs would amount to.

C. E. DETMOLD, Civil Engineer.

ELECTRICAL TELEGRAPH.

Among the Electrical novelties of the day, and they are numerous, the Telegraph of Prof. S. F. B. Morse, of the New-York University, is one that has excited much admiration, from its simplicity and immediate application to use.

We have not ourselves had the pleasure of examining it; we give a description from the Commercial Advertiser.

The only difficulties consist in the perfect insulating of the wire in situations where it will be exposed to the contact of water. The numerous waterproof inventions of the day can certainly furnish a cheap and perfect process for insulation. We do not attach much weight to the objection advanced by some, that through design the wire may be divided at a time when most needed, and in such a manner as not to leave indications at what point, in a line of many miles,

this may have been done. It would require but very little contrivance to place it entirely out of the power of one unacquainted with the location, to determine the exact line of the position of so small a chain as the wire and its insulating covering would constitute. The necessary search could not elude observation. A very great advantage in such a telegraph will be found in the private mode of operation, even the moment of communicating cannot be known except at each terminus.

A much more complicated telegraph has been successfully tried on the line of the London and Birmingham Railroad.

We understand that Prof. Morse has much simplified the operations of the machine, by the discovery of an alphabet, instead of the reference by numbers.

"We had the pleasure, yesterday, of seeing in operation the very ingenious and beautiful contrivance invented by Professor Morse, for communicating intelligence at great distances, with light-like rapidity, by the agency of electro-magnetism, as it used to be called, the galvanic fluid. The machinery employed by Mr. Morse is far from complicated, yet not easy to describe intelligibly. It consists of a galvanic battery, any required length of coated wire, a font of type, two dictionaries, a small apparatus at one end of the line for breaking and renewing the galvanic chains of communication, regulated by the type set up, and at the other end of the line another set of apparatus, by which a brass pen is made to strike upon a sheet of paper, rolled round a small revolving cylinder—a stroke of the pen being given at every renewal of the galvanic communication. The length of wire through which the signals were conveyed, was ten miles; this wire being wound for convenience, around some three or four large wooden rollers. In attempting to give our readers some idea of this admirably ingenious machinery, we will begin at what printers very naturally consider the beginning—to wit, the types.

"These are thin pieces of metal, about two-thirds or three-quarters of an inch in width, one of the longer edges being notched to the depth of about half an inch—the number of notches being from one to nine, representing the nine numerals; the cypher is represented by a long notch, or indentation of about three-quarters of an inch. With these ten types, it is evident, therefore, that any given amount in figures may be represented.

"Next come the gallies, which are pieces of wood about an inch square and 80 inches long, having cogs on the underside, and on the upper a slit, extending throughout the length, and deep enough to receive half the width of the types above described, which are sent into the slit in line, as required to represent the numbers.

Every word in the language is represented by a number, the whole dictionary containing some 50,000. The two dictionaries are of course precisely similar, one being for use at either end of the telegraphic line. Every word has its number placed before it, so that the number for the word or the word for the number may be found with ease and expedition.

The apparatus for breaking and renewing the galvanic communication is simple and efficient. It consists merely of a lever, about three feet long, moving on a pivot at one end, and having at the other a pair of copper points, which fall into as many small cups containing quicksilver, and are raised again, according as the end of the lever is depressed or deviated. The cups communicate by wires with the galvanic battery, and to the lever is attached the end of the ten mile wire. Connected with the lever is a small winch, working a toothed wheel, which plays in the cogs of the galley, so as to make it pass along, under the lever.

Upon the under side of the lever, not far from the pivot on which it moves up or down, is a brass tooth, fitting the notches in the types. So that the operation is, when the winch is turned and the galley moves along under the lever, to make this rise and fall alternately, as the tooth falls into the notches in succession. Thus the communication is broken and renewed in a succession exactly corresponding with the notches of the types, which notches in their order represent a given sum in figures. This is the contrivance at one end of the line—the end from which intelligence is to be communicated.

The apparatus at the other end is somewhat more complex, and we shall not attempt to describe it farther than by saying, that its object is, first, to attract attention by striking a bell, acted upon by the galvanic stroke or shock from the other end, through the ten mile wire next to set a motion, the cylinder around which the paper is wound, and lastly, to make the brass pen strike this paper at every renewal of the communication, and rise from it at every break. It is obvious, therefore, that the succession of dots on the paper, the cylinder all the while slowly revolving, will correspond exactly with the notches in the types, as the galley passes under and acts upon the lever at the other end. Thus, suppose notches to represent the numbers 22, 47, 121 and 236. The dots on the paper will stand thus: oo oo oooo ooooooo o oo o oo ooo ooooo the long spaces indicating that the number is complete, and that a new one is to be commenced. A cypher is indicated by a dash, thus;———; the communication remaining unbroken while the long indention in the edge of the types passes under the tooth of the lever.—Such is the contrivances—if our readers can understand the description—by which Professor Morse proposes to communicate any required information, between points however distant, in a space of time much less than must be necessary by any other mode ever devised, or suggested. We have not the requisite science to offer an opinion whether it is or not liable to objection; but so far as the experiments we saw may be taken in evidence, the result is perfectly satisfactory and convincing. A communication of our own suggesting, and only known to Mr. Morse by the numbers representing the words, was communicated in eight minutes from the time at which he commenced setting the type; and this too, under all the disadvantages arising from want of practice, and from the presence of a curious and eager throng of spectators.

That the galvanic stroke was communicated through the whole ten miles of wire, was abundantly demonstrated—and we understand from gentlemen present, more capable than ourselves of appreciating the evidence; and we also understood from them, that it would have communicated through a hundred miles with the same rapidity and certainty. The rapidity, by the way, is that of light; the keenest eye can perceive no interval between the fall of the lever at one end, and that of the brass pen at the other.

It is proper to say that the dictionaries used are the common octavos of Walker, and contain multitudes of words which would never be required. Professor Morse said that he entertained no doubt of being able to reduce the words to 30,000, or perhaps to 20,000. Our own opinion is that a much smaller number could be made sufficient.

We understand that Professor Morse goes to Washington immediately with his apparatus, where it will doubtless attract wondering attention.

NOTE.—A more *obviously* satisfactory experiment might be made perhaps, by stretching out the line of wrie between two points as distant as convenience would permit; as, for instance, between the Batteryand 40th street—which might be done, we should think, by stations on the tops of houses.

TOLEDO AND MICHIGAN CITY RAILROAD

The entire survey of this road is now completed, and the part from Michigan City to Laporte, we are informed, is in the progress of construction. Its whole length is 178 miles; 64 in Ohio, and 114 in Indiana. The Ohio line has been run. The western country is probably the first in the word for Railroads; and the resources of the above described section of the country richly deserve such a communication.—*Chicago Citizen.*

LIGHT EVOLVED FROM INSECTS.

A singular phenomenon was witnessed on Tuesday evening, in the city of Canterbury. The residents within and near the precincts of the Old Castle, at the southern entrance of the city, were alarmed in the night by a stream of red light, apparently issuing from the old ruins, as if a fire were raging below. On repairing to the spot, it was discovered that the light emanated from an innumerable swarm of small insects, which had collected on the walls and about the old ruins. The moon was not visible, and, with the exception of the spot on which they had located, all was darkness. With the morning sun the little creatures disappeared. About thirty years ago a similar phenomenon was witnessed on these walls.—*Kentish Gazette.*

ARSENIC IN CANDLES.

At a late meeting of the Medico-Botanic Society, Mr. Everitt made some remarks respecting the tests for arsenic, and afterwards demonstrated its presence in the composition candles. Having fully proved the existence of the poison in the candle, in the proportion of at least two grains in each (and he stated his belief that four grains were a more correct statement,) he then proceeded to assign a reason for its use. Candles which are made of tallow are of too low a melting point to admit of the use of a curved wick. Stearine or spermaceti, either of which has a much higher melting point, is, therefore, employed in making the composition candles, and to prevent its running into grain or crystalizing, a certain quantity of wax was added, which, it was found, would fully answer the purpose. It was afterwards discovered that a small quantity of arsenic would effect the same object, and it being considerably cheaper it was adopted into use. The professor further stated that, when he had made the discovery, and it had become bruited abroad, his opinions were confirmed by two or three manufacturers who acknowledged using the poison. He left it to the members of the profession to determine whether arsenic thus volatilized, and coming in contact with the lungs, would prove deleterious. Judging from the effects of other gases, he thought it would be injurious.—*Lancet.*

THE RAFT IN RED RIVER.

The obstruction originally occupied a space of upwards of two hundred miles; and, there is sufficient evidence that it has existed for ages before the discovery of the country, while its banks exhibit indubitable proof, that it once extended not within fifty miles of the confluence of that river with the Mississippi. The annual increasement has been estimated at two miles; and once formed, the serpenttine course of the stream forbids all possibility of removal, except by artificial measures, or the slow process of decay. In some places the raft is condensed to an astonishing depth, and forms what is called "the sunken raft:" a single strong log removed will sometimes liberate hundreds The raft region may now be considered under three divisions; that from which the raft is entirely removed, extending 140 miles from the commencement; that in which the raft is cut up and pulled in pieces, and not floated off—for which nothing is wanted but a strong current, which must immediately take place—33 miles in extent; and that, lastly, which has not yet been commenced The water expelled from the channel by the raft into the lakes, parallel to the banks as the obstruction is removed, turns and deepens the bed of the stream. At the commencement of the raft there is little or no current. This has added much to the labour in removing the obstruction; and many of the logs removed, have floated back subsequently by a rise in the Mississippi. The removal now of a few yards of solid raft, causes a fall of eighteen inches above it, and a rise of six feet below. There remains only about four miles of the raft to be removed, and, when the channel is once clear, the current will be powerful and deep, and the banks on either side will be lofty and firm. Capt. Shrieve declares, that all can be accomplished in *three months*, after a suitable appropriation from Congress is made.

The magnitude of this undertaking, and the results which must ensue from its accomplishment, cannot be too highly appreciated. The river is navigable for more than 2000 miles above the raft, and through a region unrivalled in fertility. Though now thinly settled, it is rapidly populating—hundreds await the removal of the raft as a signal for entering the country—and all its vast resources and natural wealth must soon be developed. The result of this undertaking, once involved in doubt, as well as the permanent advantages which must ensue, are no longer problematical. The indefatigable industry, the untiring enterprise—the indomitable perseverance, and the enlarged and truly scientific designs of Captain M. Shrieve, the projector and accomplisher of this noble national work, can never be estimated beyond their merits His history is identified with that of the empire of the West; and his fame will endure so long as the magnificent streams with which his name is associated, shall continue to roll on their volumed waters to the deep.—*St. Louis Bulletin.*

TURF FOR STEAMBOAT FUEL.

It is an interesting fact, that turf is now used as fuel on board the steamers plying between Limerick, Clare, and Kilrush. The Garryowen has made the passage between Kilrush and Limerick, fired with turf, in three hours and twenty minutes.—*Irish Paper.*

PAPER CASTS OF SCULPTURE.

My servants made me casts in paper of the sculpture on the walls of these two rooms, that is, of all the sculpture in the three large plates which I now publish. This method of obtaining fac-similes of sculpture in basso-relievo is very successful, and so easy, that I had no difficulty in teaching it to my Arabs. I found stiff, unsized, common white paper to be best adapted for the purpose. It should be well damped, and, when applied to sculpture still retaining its color, not to injure the latter, care should be taken that the side of the paper placed on the figures be dry—that it be not the side which has been sponged. The paper, when applied to the sculpture, should be evenly patted with a napkin folded rather stiffly; and, if any part of the figures or hieroglyphics be in antaglio or elaborately worked, it is better to press the paper over that part with the fingers. Five minutes is quite sufficient to make a cast of this description. When taken off the wall it should be laid on the ground or sand to dry. I possess many hundred casts, which my Arabs made for me at Thebes and in the Oasis. Indeed, I very rarely made any drawings of sculpture without having a cast of the same; and as the latter are how quite fresh as on the day they were taken, the engraver having not only my drawing but also these indubitable fac-similes, is enabled to make my plates exactly like, and quite equal to the original.—*Hosking's Visit to the Oasis.*

GLASS CLOTH.

Richard Barker and Son, of Ossett-street-side, near Dewsbury, have found out an improvement in glass, and have it so pliable that they can make a cloth or fabric of the finest texture. They have pieces of this glass two yards and a-half long and from nine inches to thirty-six inches in breadth; they have also made some very fine ladies' head-dresses or ornaments from this material, which are considered both very curious and useful. —*English Paper.*

BRIDGE OR TUNNEL FROM DOVER TO CALAIS

Mr. Coppett, an English engineer, is now on his road to Paris to lay before the French government a project for constructing a passage to cross dryshod from Calais to Dover. He at Havre explained his plan to the public. Mr. Coppett asks of France only one milliard, and as much from England. With this trifling sum, he will make cones like those employed at Cherbourg between fifty and sixty years ago. If the government does not approve of this system, he has in his pocket three or four others For instance, he will make a tunnel under the sea from Dover to Calais, introducing from one end to the other cast-iron pipes 18 feet in diameter. This last mode of communication, according to Mr. Coppett, would cost only one milliard, to be paid in equal portions by both countries.—*Daily Paper.*

THE RAISING OF THE WILLIAM.

Much interest has been excited by the various methods adopted for raising the two vessels, the Apollo steamer and the William of Sunderland, both sunk near this town. The first was to have been raised by means of air bags, and the latter by cylindrical air cones. Through Mr. Kemp, the inventor of the latter apparatus, a number of scientific gentlemen, who take a great interest in the success of this novel means of raising vessels of any magnitude, have inspected not only the working models, but the whole apparatus by which the William is to be brought up. The William was run down by one of the foreign steamers last winter —she was 400 tons burden, and not being considered worth raising, was abandoned by her owners, and became a ruinous impediment to the navigation. The Lord Mayor, as conservator of the Thames, put out notices for tenders for the removal of the wreck, and Mr. Kemp's plan was accepted, his offer being 500*l.* A large schooner was brought to the spot, containing 32 cylindrical vessels each six feet high, by four and a half diameter, lined through with zinc, and having only one head. Across the opening is a strong iron, which is firmly attached to the machine, with a hook in the centre. The first step resorted to was to ascertain the precise situation of the vessel. This was done by means of Dean's diving apparatus, which merely consists of a copper helmet, with a glass front, supplied with air from a pump in the vessel above. The divers then proceeded to pass entirely round the vessel from head to stern a chain cable of tremendous strength. To this at intervening distances of six feet is attached short bridle chains; and to the end of each of these is a rope with a buoy attached to it, which floats on the surface. When everything below is complete, this rope is passed through the eye at the open end of the cone. The cone is then cast overboard and immediately fills with water, and descends exactly to the bridle chain. The diver then goes down and secures the two together. As soon as a sufficient number are attached, a tube connected with the air pump is placed under the open end; and the air is then forced from the pump into the cone, and as soon as it leaves the tube, rises naturally inside the vessel and displaces the water by taking its place at the upper end. The cylinders are filled in this manner by degrees, taking the alternate sides of the head and stern first. Water being a non-elastic fluid, will naturally cause a body that may be sunk to rise to the surface as soon as it shall be made lighter by the elastic fluid confined in the cylinders. Therefore it is quite clear that any body must be raised if only sufficient air attached to it, and this was the case in the experiment tried on a small vessel loaded with iron we had the pleasure of witnessing, and which it was the opinion of every person present must raise the William, it were not for the numerous impediments and obstructions that have been thrown in the way. The vessel lying in mid-channel is being continually run over by other vessels; and several times the iron chain round the bottom of the wreck has been carried away by the anchors of colliers and others getting foul of it. The buoys attached to the bridle chains have been over and over again destroyed by the paddle-wheels of the steamers, whose masters really appear bent on doing the machinery as much injury as possible. Two of the large cylinders were last week carried completely away, and have not since been found. The Lord Mayor has sent down a lighter, which is moored, to warn vessels from the spot, and the city flag is hoisted on board Mr. Kemp's schooner; fires are also kept burning the whole of the night; even this is to no purpose, for on Sunday afternoon last, just as every thing was prepared for weighing, down came a collier, damaged the schooner to the amount of 200*l.*, and carried away a large number of tanks. It is evident, unless some better protection is afforded Mr. Kemp, he must abandon this ingenious plan, at considerable loss to himself, and the almost total destruction of his property. The working model exhibited is that of a vessel about three feet long, loaded with iron, which was raised to the top of the water in the tank with the greatest possible ease, as was also a large lump of iron, and every person present seemed perfectly satisfied that this plan must succeed in deep water, where every other method would fail. —*Gravesend Journal.*

BABBAGE'S CALCULATING MACHINE.

Much curiosity has been excited from time to time in regard to this far-famed miracle of art. The following account of the present state of the machine, is taken from a late work of Mr. Babbage, entitled, the "Ninth Bridgewater Treatise," and which, by the way, is no part of that Series, but rather a criticism upon certain of the actual Bridgewater Treatises.

"The nature of the arguments advanced in this volume having obliged me to refer more frequently than I should have chosen, to the calculating engine, it becomes necessary to give the reader some brief account of its progress and present state.

"About the year 1821, I undertook to superintend, for the Government, the construction of an engine for calculating and printing mathematical and astronomical tables. Early in the year 1833, a small portion of the machine was put together, and it performed its work with all the precision that had been anticipated. At that period circumstances which I could not control, caused what I then considered a temporary suspension of its progress; and the Government, on whose decision the continuance or discontinuance of the work depended, have not yet communicated to me their wishes on the question. The first illustration I have employed is derived from the calculations made with this engine.

"About October, 1834, I commenced the design of another and far more powerful engine. Many of the contrivances necessary for its performance, have since been discussed and drawn according to various principles; and all of them have been invented in more than one form. I consider then, even in their present state, as susceptible of practical execution; but time, thought and expense, will probably improve them. As the remaining illustrations are all drawn from the powers of this new engine, it may be right to state, that it will calculate the numerical value of any algebraical function; that, at any period previously fixed upon, or contingent on certain events, it will cease to tabulate that algebraic function, and commence the calculation of a different one, and that these changes may be repeated to any extent.

"The former engine could employ about 120 figures in its calculations; the present is intended to compute with about 4000.

"Here I should willingly have left the subject; but the public having erroneously imagined, that the sums of money paid to the workmen for the construction of the engine were the remuneration of my own services for inventing and directing its progress: and a Committee of the House of Commons having incidentally led the public to believe that a sum of money was voted to me for that purpose, I think it right to give to that report the most direct and unqualified contradiction."—p. 170.

TELESCOPES.

A correspondent of the *Hereford Journal*, in reference to the inconvenience experienced from the condensation of moisture which is apt to take place upon the object glasses of telescopes in the atmosphere of the evening, says that it may be obviated by the employment of a tube of pasteboard 12 or 18 inches in length, so constructed as to fit upon the object end of the instrument. The invention, he says, was that of the celebrated astronomer De la Hire.—*London Mech. Mag.*

ARTIFICIAL RUBIES.

M. Gaudin has presented a report to the Institute of Paris, detailing his mode of proceeding in the preparation of ficticious rubies, which in every respect resemble those found in nature. He submits aluminium, with a small quantity of chromate of potash, previously calcined, to the influence of a powerful oxy-hydrogen blow-pipe, by the action of which the material is melted, and no cooling, the crystel presents all the characteristics of the ruby. The Academy appointed M. Becquerel to examine into the merit of the discovery, and his report being deemed conclusive, presented their *thanks* to the author.—*Ib.*

MANUFACTURES OF LANCASHIRE.

Probably the largest entire room for manufacture in this county, and if so, in Europe, is that of Messrs T. & E. Grundy, at Heap-bridge, near Bury. It is appropriated to the manufacture of woollens, and is 85 yards in length by 75 in width, and 12 feet in height; is supported by 253 pillars, some of which also bear gearing; it has 65 large windows, and 253 skylights; 672 feet of steam piping run through it, and about 2,688 feet of shafting are at work. Ii contains, or will contain, eight carding engines, probably the largest in this county; eight gigantic slubbing frames; 40 mules; 200 looms, some for weaving prials, three in width; 450 gas jets; will be worked by one engine of comparatively small power, and is surmounted by a funnel of 69 yards and two feet.—*Bolton Free Press.*

A GOOD HEARING FOR DR. REID.

Dr. Reid of Edinburgh, who gave evidence before the House of Commons' Committee on the best way of constructing a building for the purpose of hearing, with reference to the new House of Parliament, is now on an acoustic tour through Europe, in order to examine the principal buildings with reference to their capabilities in that point of view. He lately paid a visit to Berlin and Potsdam—to the latter, it appears, for the purpose of examining the acoustic properties of the barracks. Our readers may be surprised at his pushing the ardour of research so far, but their wonder will cease when they learn that Dr. Reid is an Accoustic Commissioner, and travels at the expense of Government.—*Ib.*

THE NEW GOVERNMENT STEAMER "GORDON."

The new steamer "Gordon," now lying in Woolwich Basin, is the largest steamer in her Majesty's service; she is of 1150 tons, builder's measurement—37 feet 6 inches beam; and her depth of hold 22 ft. 9 in. She has sponsons on each side, which make the deck 10 ft. more, say 47 ft. 6 in.; length between perpendiculars, 179 ft.; over all 210 ft. She will carry a tier of 36-pounders on her main deck, and two large 84-pounders. At each end on the upper deck there are swivel guns that will range 290° round the horizon. The vessel is constructed from the designs of Sir William Symonds, Surveyer of the Navy, and is, without exception, as regards her build and form, the finest steamer afloat. She will carry twenty days coal—1000 troops; 136 crew; and stores and provisions for all, for six months. The engines, which are of 320 horse power, are now making by Messrs. Seaward & Co., with their patent slide valves, now coming into such general use on board of steam vessels. The cylinders are 64 inches in diameter; wheels 26 feet; boilers all of copper, and the coal boxes in the engine room will contain 360 tons of coal. The boilers, cylinders, and all the vulnerable parts of the engine will be four feet under the water line, besides having on each side from end to end of the engine room, a depth of coals in the boxes 7 feet thick. The whole of the steam machinery, may be said to be invulnerable from shot.—*London Mechanics' Magazine.*

STEAM VESSELS IN SWEDEN.

The progress of Sweden in steam-navigation may be considered as very creditable to that country, when we reflect that in spite of great natural resources, it is at present the poorest in Europe. The number of steam vessels now in activit amounts to twenty-six, of which four belong to the government, and twenty-two to private individuals. The horse-power of the four government steamers is stated at 275, and that of the private ones at only 899;—the average, therefore, for one of the former is 68 horses, and for one of the latter, 40, or one-tenth of the power of the large steamer just launched at Bristol, to run between that port and New-York, three of a similar size to which would exceed in power the whole Swedish twenty-six. Four other steam vessels are now, however, in course of building for the Swedish government, and it is intended to go on gradually adding more and more to the navy.

FUR IN STEAM BOILERS.

Messers Neron and Kurtz of Brussels have advertised an invention for dissolving the "fur" which collects in kettles and boilers, and is found so serious a nuisance in all operations conducted by steam. For this they require a yearly subscription from those who avail themselves of it, of so high an amount as, in the case of steam engines, eight franks per annum for every horse-power. The German papers in taking notice of this, remark, that Mr. Bornschein of Frankfort on the Maine, announced a somewhat similar discovery in the early part of this year, but that by his plan, the "fur" is not dissolved when accumulated, but absolutely prevented from accumulating. For the disclosure of his method he only requires the sum of ten ducats, not yearly, but once for all. We should think that when this information reaches Brussels, Messrs. Neron and Kurtz will have few customers for their expensive wares, unless Bornschein's discovery be discovered to be useless.—*London Mechanics' Mag.*

From the Baltimore Gazette.

Mr. Editor:—It is a matter of very great astonishment to me, that the public will continue to submit to the inconvenience of having hydrants subject to being closed up by the frost, when they could so easily remedy it, not by adopting the new fashioned kind lately imported from Philadelphia by the Water Company, and which they propose to put down at a cheap first cost, but which in the end will be found to be exceedingly dear, but by the adoption of the one upon the principle invented by our fellow citizen, Sater T. Walker, Esq. The writer of this is personally acquainted with the fact, that this invention has been tested during the last two winters in the yards of John Scott, Esq. Fielding Lucas, Esq. James L. Ridgely, Esq. Walter Ball, Esq. and Edward Cockey, Esq.; and in every instance it has been found to answer the end proposed by the inventor, viz. furnishing, during the most severe weather, a free and unobstructed supply of water. In addition to this great desideratum, such is the construction of the works that friction to as great an extent as is practicable has been avoided, so that their duration may be considered equal to about one hundred of those down on the Philadelphia plan. The Assignee of the patent will, I feel assured, if applied to, put them at a reasonable cost to any of our citizens.

LOCOMOTIVES FOR AMERICA.

We were highly gratified at witnessing, in the course of the week, a trial of the locomotive engines manufactured by Messrs. Braithwaite, Milner, and Company. The workship of the engines is of a first rate character. We are glad to know that the late commercial difficulties, which put so serious a check upon the enterprise of our translantic brethren, have so far been overcome that confidence is restored, and our railway manufactures for the American market are again in active operation.—*Railway Times.*

LITERATURE IN TURKEY.

The Turkish Penny Magazine, whose appearance we noticed some time ago, is a reprint of our own Penny Magizine, of which the printing and press work are executed at the expense of the Grand Seignor. It is expected soon to equal in circulation the Turkish newspaper which has been established for some time. This now amounts to nearly five thousand, and is expected to be quadrupled as soon as *the new post office* arrangements are completed throughout the empire.—*Ib.*

RENDERING THATCH INCOMBUSTIBLE.

A. M. G. Barentin of Leipsic lately invented a method of preparing thatched roofs in such a manner as not to be liable to danger from fire. The Saxon government has had M. Barentin's thatch tried, and has approved of it so much as to order it to be generally made use of. (*Seotsman*, Sept. 20, 1837.) Alum would have some effect, both in preserving thatch, and in rendering it incombustible. We know an instance of a gentleman Kyanising the thatch to be used on an ornamental cottage roof, and we hope to be able in a few years to state the result. In the mean time we should be glad to learn if any of our readers know the German secret; and whether any have tried Kyanising with thatch, and what has been the expense per superficial yard of thatched roof, or per truss or load of thatch.—*Architectural Magazine.*

STEAM NAVIGATION TO AMERICA.

Sir,—An article on "Steam Navigation" appeared in a recent number of the Edinburg Review (No. 131,) in which the writer endeavours to prove that Dr. Lardner is correct in the conclusion to which he came in his paper on that subject laid before the British Association, Sept. 1836,—viz., that a profitable and permanent connexion could not be effected between New York and England in *one* trip.

As the subject is one of general interest, and of great importance to the commercial interests of this country in particular, great care should be taken not to discourage the spirit of enterprise, which has prompted three different parties to make the attempt to establish steam communication with the United States, nor to afford an excuse for the East Indian Government to fall back into its former inertness upon the subject of a steam communication with India, now that it has been just roused into action, by the determined and persevering importunity of its subjects there. It is essential to a fair trial of any project, that the best means be employed to accomplish the end designed. If a vessel whose speed is only five miles per hour be employed to perform a certain passage in a given time, when one whose speed is ten miles an hour can be had, it is evident that the experiment is not a fair one. So in reasoning upon the practicability of any scheme, like that of steam navigation to the United States, if a number of vessels be selected whose size, speed and performance, are notoriously less than those of many other vessels which are actually in existence, it is evident that however correctly the size, speed, and performance of the selected vessels may be given, it does not prove that the scheme is impracticable with vessels of larger size, greater speed, & better performance.

The writer of the article "Steam Navigation" in the Edinburgh Review, has given us a very full and elaborate table of the consumption of coals, average speed, &c. of eleven steam vessels, from which he most logically and correctly proves, that with such vessels, a steam communication with New York is impracticable. Had his researches been somewhat more extended, it is very possible that he might have found, at least eleven other steam vessels, whose average speed would have shown that instead of twenty-four or twenty-five days, it would not be possible to perform the same distance in fourteen or fifteen days.

The Reviewer states that Mr. Field considers that great improvements have been made in marine engines since 1834. The performance of many of the new steam vessels fully bear out Mr. Field in the opinion which he is said to have given. Yet, by a strange perversity, he adopts as *data* the performance of steam ships most, if not all of them, built before that time, and concludes, that a steam communication with New York is impracticable!

The Admiralty steamers are the *data* upon which his calculations are made; yet he has not informed us whether they slackened their speed during the night, as I believe is the practice in her Majesty's service.

The writer contends, that any inferences from coast and channel trips are fallacious; but he has not shown us why they are so. It is well known, that on the coast and in the channel, the short cross sea which is so frequent, retards the progress of steam vessels much more than a long rolling sea, and therefore *a priori*, this affords a good test by which to try the performance of a steam vessel.

The use of salt water for raising steam is admitted to be a great obstacle to the performance of long voyages, but it is also admitted, that fresh water may be substituted with good effect; the recent improvements in condensation, warrant us to expect that it may be done with success.

But the great difficulty is, the quantity of coals required, which the Reviewer says, will prove an insuperable obstacle to long voyages. In this particular it seems highly probable that he will be found to be in error, for upon his own showing, the larger vessels require a smaller power in proportion to their tonnage than the smaller ones. And of the vessels which he has selected as the data upon which he makes his calculations, there are only three which are now deemed large vessels,—viz., the Medea Steam Frigate, of 807 tons; the Dee, of 639 tons; and the Private Steamer A, of 660 tons. The two first are constructed for war, and are therefore not to be expected to have sufficient capacity for carrying a large supply of fuel; and the Private Stenmer A, is not sufficiently described, for the public to form any judgment as to the quantity of fuel she will carry.

The Reviewer states that a steamer of 1,200 tons, with 300 horse power, will only stow 500 tons of coals. In this statement it is evident that he has taken the nominal tonnage as the actual weight she is capable of carrying; whereas, it is usually found that a vessel will carry about 50 per cent. more than her nominal tonnage; thus, a vessel nominally of 1,200 tons is capable of carrying with safety 1,800 tons. If then the power be equal to 300 horses, the weight of the machinery and water will be, say 400 tons. The consumption of coals per day with boilers of the best construction, will be 72,000 lbs. per day, and for fourteen days will be 450 tons, leaving 950 tons for spare coals, merchandise and stores.

Another important feature which has been overlooked, is the fact, that large vessels are propelled at a much greater rate with the same proportion of power to tonnage than smaller ones. Hence, if the Dundee and Perth, which are about 650 tons, are propelled at the rate of 9.99 miles, nearly ten miles per hour, as it is found that with a strong wind in such a direction, that a steamer can set her sails, her speed will be accelerated about a mile, or mile and a half per hour.

Let us take the large steam ship now building in London for the British and American Steam Navigation Company, and try what her capabilities are for performing the intended voyage. Her nominal tonnage is 1,795 tons; she is to be propelled by two engines of 220 horse power each, which will require 47 tons 2 cwt. 3 qurs. 12 lbs. of coal per day of twenty-four hours; if her speed is only nine and a half miles per hour, she will perform the passage in fourteen and a half days, and consume during that period 683 tons 11 cwt. 1 qr. 20 lbs of coals.

Take the estimate weight of her machinery, boilers and water at 600 tons, and (allowing 50 per cent. on the consumption of coals as a reserve) the weight of fuel at 1,025 tons, we have 1,625 tons for machinery and coals. Now the calculated displacement between the light and load water line amounts to about 2400 tons, thus leaving about 800 tons to be occupied in stores, merchandise and passengers. From a drawing which I constructed, in order to be submitted to the directors, I found by calculation, that with her machinery, coals and merchandise, she would draw only 16 feet of water, if built after my design; and, although built from another design, a vessel of 1,200 tons may be reasonably expected (having the same proportion of tonnage to power) to be propelled at a greater *velocity*, but if, contrary to all experience, she should not go faster, then she would perform the distance between New York and England in fourteen days; and if the currents and winds should be favourable, in much less time, I do not think that her draft of water will be greatly different, probably rather more than less, when fully equipped.

Some of your readers may be impatient at this mode of meeting the question, and wish for some facts upon which they too may reason and come to a conclusion for themselves.

In 1825, the Enterprise, a vessel of about 400 tons, effected her passage from England to Calcutta in 113 days, 64 of which she was propelled by steam, and 49 by sails alone.

In the present year, the Atalanta steam ship, of about 650 tons, effected her passage from England to Calcutta in 91 days, 23 of which she was in port, and under weigh 68 days only.

Here then is a striking instance of the improved state of marine steam engines, and of the advantage which a large vessel has over a small one in making her passage. The average speed of the Enterprise, taking the distance at 15,000 miles, is 132⅔ miles per day, or about 5½ miles per hour; whilst that of the Atalanta is 220⅔ miles per day, or 9⅛th miles per hour for the whole distance.

The average speed of her Majesty's steam vessels on the Mediterranean sta-

tion was, some time since, officially stated to be 7¼th miles per hour, which is 1¼th miles more than the average given in the Edinburgh Review; taking the highest number as correct, it is much below the rate of most merchant steamers, under much more unfavourable circumstances. For instance, those between Scotland and London come to an average speed of upwards of nine miles per hour; those between Glasgow and Liverpool, perform that passage in, from seventeen to twenty-four hours; and from the books of one company, I found on inspection, that the average time occupied in the passage, both winter and summer, was nineteen hours; and it was thought that some new boats, which were then nearly ready would make the average still less, now the distance by sea being considerably more than 200 miles, the average speed of the steam vessels employed in that trade, must considerably exceed ten miles per hour. The voyages now regularly performed by the merchant steamers to the Peninsula and into the Mediterranean warrant us to expect that a steam communication will be effected with New York in *one* trip.

It would be unjust not to refer to the Columbus, a steam ship, fitting upon Mr. Howard's principle for the purpose of attempting the passage to New York. She is capable, I am informed, of carrying a sufficient quantity of coals to supply the engine for upwards of forty days, and will use *fresh water* only for raising steam.

Excuse my trespassing so long on your time, and believe me,

Yours truly, GEORGE BAYLEY.

NEW LOCK.

M. Lettestu has invented a lock, by which the bolt is drawn into the staple by a circular instead of a rectilinear motion. When shut it is said to resist, by its construction, both the opening of the door and the slipping of the frame, (chambranle). The key to move the bolt acts in a nut composed of several little rundles (rondelles); springs carried by some, fastened by others, and unfastened by projections conveniently constructed on a bit of the key, form the garniture or guard of the lock. The several pieces composing the nut, although of a similar exterior dimensions, are various within, and may be replaced from one lock to the other.

EXPLOSION OF STEAM-BOILERS.

The valves being in order, it is generally considered that explosions arise chiefly from the sinking of the water below a certain level. M. Sorel has proposed a method to obviate this by the introduction of a tube into the boiler descending a little lower than the said level. The orifice of the pipe is to be kept closed by means of a valve carried by a float, which sinking, as the water descends, beneath the desired level, opens the valve and permits the steam to pass out.—*London Railway Mag.*

The annexed Table, showing the comparative durability of various kinds of timber, unprepared and exposed under the most trying circumstances, will be found of constant use for reference.

We should like to ascertain the state of the timber in some of our oldest Railroads. Accurate statements are solicited from those who can afford them.

DURABILITY OF VARIOUS KINDS OF WOOD.

From the Nautical Magazine.

The following are the particulars of experiments made on several kinds of wood, 1 1·2 inch square, and 2 feet long, placed vertically in the ground, and about 1 foot 6 inches exposed to the atmosphere, on the 1st of January, 1831; examined at two different times, viz., the 8th of May, 1833, and the 24th February, 1836:—

Species of Wood.	*Remarks, 8th May, 1833*	*Remarks, 24th February, 1836.*
English Oak	Much decayed and diminished in weight.	Very much decayed, especially those of open grain.
Italian Oak	Good, but decay had commenced on surface.	Do. do. rather less than the English.
Adriatic Oak	Very much decayed.	Very much decayed, excepting one piece, very good.
Leaf or Live Oak	Very good.	Three much decayed, the rest tolerable.
Canada White Oak	Very much decayed.	Very bad and rotten.
Memel do.	Ditto.	Ditto.
Dantzic do.	Ditto.	Exceeding bad.
Mahogany hard	Good.	Tolerably good.
Do soft	Much decayed.	Very bad, totally decayed.
Libanus Cedar	Good.	Tolerably good.
Pencil Cedar	Very good.	All very good, as when put in the ground.
African, No. 1	Very good.	A little decayed, and inclined to doat; better than English oak.
African, No. 2	Very good.	Worse than No. 1.
Teak, heavy	Very good.	Rather soft, but good.
Teak, light	Good.	Soft 1-4, but good.
Teak, part of Hasting's mizen-mast	Good.	Soft 1-4, the rest indifferent.
Fir, Dantzic	Much decayed.	Very much decayed, rotten all through.
Fir, Riga	Much decayed.	As bad as the Dantzic.
Fir, Memel	Much decayed.	Very bad, rotten.
Fir, Red Pine	Much decayed.	Very rotten, much like the Dantzic and Riga.
Fir, Yellow Pine	Very much decayed.	Very rotten.
Do. Virginia Pine	Decayed.	Very rotten.
Do. Pitch Pine, heavy	Decayed 1-2 of an inch, the rest good.	Decayed 1-8 of an inch, the rest tolerably good.
Do. do. light	Very rotten.	Very rotten.
Polish Larch	Decayed 1-4 in the surface, and lost in weight.	Decayed 1-4, the rest a little decayed.
Scotch do. Trenails	Surface 1-4 in, decayed and brittle.	Surface 1-4 in, decayed, the rest brittle.
English Elm	Very rotten.	All rotten.
Canada rock do.	Ditto.	Rotten.
American ash	Ditto.	Ditto.
Locust Trenails	Good and retained their wt.	1-8 in, rotten, the rest as sound as when put in the ground.
Scotch Larch do.	Surface 1-4 decayed, and very brittle.	1-4 in, rotten, the rest brittle.
Stinkwood dark col	Surface not decayed, but very brittle.	This piece was misplaced.
Cowdie	Surface 1-4 decayed, and very brittle.	Rotten.
Stinkwood light co	urface 1-8 dec., and brit.	Rotten.
Poonah.	Surface a little decayed, and become light.	Surface 1-8 decayed, the rest good, better than African.

Note.—Riga preferable to all the Fir, and Dantzic next.

TELEGRAPHIC COMMUNICATION BETWIXT EDINBURGH AND LONDON.

From the Scotsman.

It has been found by experiments made with a view to ascertaining the velocity of electricity, that it is transmitted instantaneously, by means of a common iron wire, a distance of eight miles; and electricians of the first eminence have declared their opinion that, judging from all scientific experience, the electric or galvanic influence would be almost

instantaneously transmitted from one end to the other of a metallic conductor, such as ordinary copper wire of moderate thickness, of some hundred miles in length.

If this scientific theory is correct, it follows that a wire, secured by a coating of non-conductors, and protected from external influence or injury, and laid under the turnpike-road between Edinburgh and London, could be the means of distinctly indicating to a person stationed in London, that such wire had been electrified or galvanized in Edinburgh—the transmission of the electric or galvanic influence being clearly discernible by various well known means. —How, then, is this scientific fact to be applied to purposes of practical and general utility? Simply by laying as many wires separated from each other as will correspond to the letters of the alphabet, and preconcerting between the persons stationed at two extremities of the line of communication, that each individual wire is to represent a particular letter; because, if the person stationed in Edinburgh can, by applying the electric influence to any one wire, instantaneously apprise another person stationed in London that a particular letter of the alphabet is thereby indicated, words and sentences *ad infinitum*, may be communicated, and the idea of a perfect telegraph would be realized.

Without experience, it is impossible to say with what rapidity this electro-magnetic telegraph could be worked; but, in all probability, intelligence could be conveyed by such a medium as quickly as it is possible to write, or at least to print; an apparatus could be constructed somewhat resembling the keys of an organ, by which the lettters of the telegraph could be touched with the most perfect ease and regularity.

It has been mentioned, that the transmission of the electricity or galvanism could be discernible by various means well known. If any indication, however slight, is made, that is enough, all that is wanted being that it should be perceivable by the person placed to watch the telegraph.

It has been assumed, that the electric current is capable of transmission by means of a single impulse from Edinburgh to London. But it is not indispensable that so great a distance should be accomplished at once. Immediate stations for supplying the telegraph with new galvanic influence could be resorted to, and its perfect efficiency still preserved.

The best mode for troughing or protecting the metallic conductors, and separating them both from each other, and from the surrounding substances by which the electric or galvanic influence might be diverted, would, of course, require considerable scientific and mechanical skill; but the object appears perfectly attainable. Insulating or non-conducting substances, as gumlac, sulphur, resin, baked wood, &c.,are cheap; and the insulation might be accomplished in many ways. For example, by laying the wires, after coating them with some non-conducting substances, in layers between thin slips of baked wood, similarly coated, the whole properly fastened together, and coated externally. These slips might be perhaps ten yards long, and at the joinings precautions for the expansion and contraction of the wire by the change of temperature, might be adopted. The whole might be enclosed in a strong oblong trough of wood, coated within and pitched without, and buried two or three feet under the turnpike road.

The expense of making the telegraph proposed is, of course, an important element in the consideration of ite practicability and utility.

The chief material necessary, viz., copper wire, is by no means expensive. It is sold at 1*s.* 6*d.* per pound, of sixty yards in length. The cost of a wire from Edinburgh to London, say 400 miles, would thus be about 900*l.*; but say for solderings, &c., 100*l.* additional, or that each copper wire, laid from Edinburgh to London, would cost 1000*l.* sterling, and that the total amount of the wires necessary to indicate separately each letter of the alphabet, would be 25,000*l.* The purchase of so large a quantity, would, of course, be made at a considerably less price; but probably one or two additional wires might be needed, and the circuit of the electrical influence must be provided for by one or more return wires.

The coating, separating, and trough ing of the wires can be accomplished by low-priced materials, and the total expense of the whole work (except the price of the wires), allowing a large sum for incidental expenditure, has been roughly estimated at 75,000*l.*, making a maximum expenditure of, say, 100,000*l.* for the completion of the telegraph. For a proportional additional sum it might be extended to Glasgow.

As to the working of the telegraph, it is apprehended, that even if the speed of writing were not attained, there could at least be no difficulty in indicating one letter per second. At this rate, a communication which would contain sixty-five words would occupy about five minutes. This is supposing the vowels to be all indicated. But abbreviation in this, and many other respects, would no doubt be contrived; and the number of words in the communication supposed, are greater than necessary for an ordinary banking or commercial letter, or for friendly enquiries and responses. Supposing, however, that each communication was to occupy five minutes, and to be charged five shillings each, if the telegraph was worked twelve hours a day, (that is, six hours from each end), it would produce a revenue of 36*l.* daily, or 10,800*l.* per annum, supposing there were 300 working days in the year. If, however, the plan is practicable, the public intelligence that would, no doubt, be transmitted by the telegraph would be sufficient to keep it in operation night and day.

Arrangements are being made for having the necessary experiments tried on a metallic conductor of fifty or a hundred miles in length, and if the same instantaneous and perfect indication of the passage of the electric or galvanic fluid is found to take place, as in the case of the recent experiments at the University, the triumph of the scheme would be complete.

MR. CROSSE'S EXPERENTS.

Mr. Crosse has lately written to M. Becquerel, that, among a variety of other things, he has succeeded in forming an entirely new substance, which crystallizes in needles, composed of a strong proportion of sulphur, and a small one of lead, of copper, and zinc. In the beginning of its formation it is of a magnificent crimson colour, which afterward changes to a brilliant scarlet, with an orange colour. The process of procuring it is thus:—An earthen pan is filled with hydro-sulphur of potass, and put in a glass vase, which is filled with a solution of sulphate of zinc. Afterwards is taken a small bow of lead and copper; the lead is plunged in hydro-sulphur of potass; the copper in sulphate of zinc. A copper wire, sufficiently bent, is then plunged in the two solutions, one end in the alkaline sulphur, the other in the sulphate of zinc. Some brilliant red crystals, in the shape of needles, issuing from a common centre, then envelope the extremity of the copper wire in the alkaline solution. This substance experiences no action in muriatic acid, but it then becomes very black. Adding some drops of nitric acid, it is decomposed, and floats, in great part, at the surface; it is then pure sulphur. The remainder contains only lead, copper, and zinc, in small proportions. Mr. Crosse writes, that since forming the substance, he had had too little time to examine it, otherwise than with great rapidity.

Among the substances sent to M. Becquerel there were, 1st, some beautiful crystals formed on the positive end of a copper wire, and, on the negative, crystals of sulphur: the solution employed was not mentioned; 2d, some per-oxide of granulous iron (fer mamelonné) on copper, surrounded with a morsel of specular iron, in relation with the negative pole, the liquid employed being a solution of proto-sulphate of iron: also some gold formed *en dendrites* at the negative pole, in a solution of gold, on some clay, slightly hardened by fire.—*Railway Mag.*

SILK WORMS.

The cultivation of the mulberry-tree, and the raising of silk-worms, has been adopted in Switzerland with great success. At Basle, August in particular, this new source of wealth has been astonishingly productive.—*Mining Jour.*

AUTOMATON VIOLINIST.

Galignani's Messenger, published at Paris, furnishes the following interesting account of a new musical wonder, in the shape of Monsieur Mareppe's automaton violin player, which was not long since exhibited before the Royal Conservatory at Paris—and caused much admiration.

"On entering the saloon, I saw a well dressed handsome figure of a man, apparently between 40 and 50, standing with a violin in his hand, as if contemplating a piece of music, which lay on a desk before him; and had I not gone to see an automaton, I should have believed the object before me to have been endowed with life and reason, so perfectly natural and easy were the attitudes and expression of countenance of the figure. I had but little time for observation before the orchestra was filled with musicians, and on the leader taking his seat, the figure instantly raised itself erect, bowed with much elegance two or three times, and then turning to the leader nodded, as if to say he was ready, and placed his violin to his shoulder. At the given signal he raised his bow, and applying it to the instrument, produced a la Paganinni, one of the most thrilling and extraordinary flourishes I ever heard, in which scarcely a semi-tone within the compass of the instrument was omitted, and this executed with a degree of rapidity and clearness perfectly astonishing. The orchestra then played a short symphony, in which the automaton occasionally joined in beautiful style; he then played a most brilliant fantasia in E. natural with accompaniments, including a movement allegro mollo on the fourth string solo, which was perfectly indescribable. The tones produced were like any thing but a violin, the expression beyond conception. I felt as if lifted from my seat, and burst into tears, in which predicament I saw most persons in the room. Suddenly he struck into a cadenza, in which the harmonics double and single, arpeggios on the four strings, and saltos, for which Paganini was so justly celebrated, were introduced with the greatest effect; after a close shake of eight bars duration, commenced the coda, a prentissina movement played in three parts throughout.

This part of the performance was perfectly magical. I have heard the great Italian, I have heard the still greater Norwegian, I have heard the best of music, but I have never heard such sounds as then saluted my ear. It commenced p p p, rising by a gradual crescendo to a pitch almost beyond belief; and then by a gradual motendo and calendo died away, leaving the audience absolutely enchanted. Monsieur Mareppe, who is a player of no mean order, then came forward amidst the most deafening acclamations, and stated that emulated by the example of Vaucaoson's flute player, he had conceived the project of constructing this figure, which had cost him many years of study and labor before he could bring it to completion. He then showed the company the interior of the figure, which was completely filled with small cranks, by which the motions are given to the several parts of the automaton at the will of the conductor, who has the machine so perfectly under control, that Mons. Mareppe proposes that the automaton shall perform any piece of music that shall be laid before him within a fortnight. He also showed that to a certain extent the figure was self acting, as on winding up a string, several of the most beautiful airs were played, among which were "Nel cor piu," "Partant pour la Syrie," "Weber's last Waltz," and "La ci d'arem la mana," all with brilliant embellishments. But the chef d'ouvre is the manner in which the figure is made to obey the direction of the conductor, whereby it is endowed with a sort of semi-reason.

HANCOCK'S PATENT CAOUTCHOUC BOOKBINDING.

While numerous very important improvements have recently taken place in every other department of the mechanics of book making, that part of binding, which consists of attaching the leaves together, has hitherto remained stationary, if indeed it has not retrograded. That this want of progress in the march of improvement, is not to be ascribed to any perfection in the art as usually practised in the present day, will readily be admitted by every one who is familiar with its details, who has a library, reads a book, or is in the practice of making entries in ledgers or other account books. Mr. Hancock, in his patent process of binding books with caoutchouc, or India rubber, (an article which has made such rapid strides in usefulness within these few years,) is the first that has effected any improvement in the operation in question; and that improvement is a most important one. The qualities of caoutchouc, its elasticity, its adhesiveness, and its being impervious to the ravages of damp or insects render it an article admirably adapted for the purpose to which it has in this instance been applied; and we think there is little doubt, but that it will in a short time totally supersede the use of stitching, paste and glue.

Mr. Hancock's invention consists in the binding of the leaves of books together by a solution of caoutchouc, or India rubber, by various methods, the books being composed of either single leaves, or sheets of any number of folds; dispensing altogether with the operations either of stitching, sewing, or sawing-in, and of the use of paste or glue in the backs. Instead of the leaves only being bound together by stitches at two or three points, the caoutchouc takes hold of the whole length of the leaf, in some of the varieties of Mr. Hancock's patented methods, and of a greater portion of it in others, The caoutchouc may also be used in conjunction with stitching, a back, however formed in this way, although of course stronger than with the caoutchouc alone, will not open quite so freely.

The advantages resulting from the adoption of Mr. Hancock's patent caoutchouc bookbinding are numerous;—the following are stated by the patentee, to be amongst the most obvious. As regards books for the library—bound in the patented manner, they will open with much greater facility, and when opened lie perfectly flat, or more nearly so than books bound in the ordinary way; thus preventing all strain on the backs, as well as obviating the necessity of keeping the leaves apart by force while reading, either with the hand, a weight, or otherwise.

In many expensive public and private libraries, the ravages of the insect produced in the paste, and by damp, have been most troublesome and destructive. Caoutchouc is impervious to both these evils. As regards collections of costly engravings, particularly when of large dimensions, and atlases, to these, the caoutchouc binding is particularly applicable, each leaf being attached with great tenacity. A large map, or chart, or even an engraving, may be doubled, and bound into a book half its size, and the fold at the back of the book, when open, be scarcely perceptible. For music books, the leaves when bound with caoutchouc, will not fly back after the V. S. operation, as they now very frequently do to the interruption of the performer, and often to the marring of a fine passage of music. Manuscripts and collections of letters, where, in the writing of them no margin is left at the back by which they can be stitched, may be bound without the least encroachment upon the writing. And, more particularly as regards ledgers and other account books—every one having any thing to do with book-keeping must have experienced the inconvenience of writing in a day book or ledger, towards the inner parts of the leaves especially, when the back, as is usually the case with such books, is of considerable thickness. The impossibility of obtaining a flat surface with ledgers, &c. bound in the ordinary way, not only retards the operation of writing, but renders it extremely tiresome, besides producing blots and stains from the difficulty of applying the pen to the paper at a proper angle; in many cases also a portion of the breadth of the sheet of paper being wasted. Mr. Hancock's patent method of binding, he states, produces such an elasticity in every part of the back, that it is eqnally convenient and easy to write, whether the book contain fifty or five hundred leaves. That these advantages are duly appreciated, may be learned from the fact, of the approval of the invention by all the great mercantile establishments to which it has been introduced, and by the first account book makers in the trade.—*London Mechanics' Magazine.*

From the London Mechanics' Magazine.

CAOUTCHOUC ROOFS.

Sir,—As yours is a repository for many crude (as well as perfected) inventions, which may afterwards be the groundwork for others of the greatest value and importance to the public, I beg to request you will lay before your readers the following suggestion for a new application of caoutchouc or India-rubber.

I have long thought, that if the tops of houses could be flat, and have reservoirs of water upon them, that water might be made available as a supply for domestic purposes to every room in the house, and also that screw hose might be fixed thereto for the purpose of extinguishing any fire in the room where it originates on its first discovery. Hitherto, lead has appeared the most suitable material for roofs, but weight, price, and contraction by the heat of the sun have been great objections. May not India-rubber be advantageously substituted? If prepared in large sheets one-eighth or three-sixteenths of an inch in thickness, they might be laid on and afterwards the joinings made perfectly secure by the solution of caoutchouc; and in case of damage from any cause, it might easily be repaired by the same means. Some of your more scientific readers can give the necessary strength of wall and timber for bearing the various depths of water which might be required. I apprehend that in large buildings, such as the new Houses of Parliament, it would not only be advantageous as a preventive of fire, but also more economical.

Yours,

A CONSTANT READER—Z.

A NEW LIGHT.

A chemist having found, after many experiments, that a void produced by electricity in a glass vessel became luminous, has, at last, succeeded in forming a long bottle, of 3 inches by 30, from which having exhausted the air, and otherwise acted upon it by a galvanic battery, a light is now emitted, being hung up in his apartment, equally clear, but not so oppressive to the eyes, as that of the sun.—*French Paper.*

MEDAL STRIKING.

We have much pleasure in announcing to the friends of the fine arts that Mr. Pistrucci, chief medallist in the Royal Mint, has discovered a method by which he can stamp a matrix or a punch from a die which has never been touched by an engraver, and shall yet make a medal identically the same with the original model in wax, an operation by which the beauty and perfection of the master's design are at once transferred to any metal, whether gold, silver, or copper, by striking it according to the usual process. It will at once be seen that this is a very different operation from that by which cast medals are manufactured. It is as simple as it is ingenious, and Mr. Pistrucci having no intention of taking out a patent for the discovery, and being anxious to give to the public the full benefit of it, in the different processes of manufacturing plate, jewellery, and all kinds of ornamental work in metal, announces that the whole of the process consists of the following method:—The model being cast in any substance, wax, clay, wood, or other fit material, a mould of it is taken in plaster, from which mould, when dried and oiled to harden it, an impression is taken in sand, or other similar substance which may be preferred, and from this again a cast is obtained in iron as thin as possible, that the work may come up sharply, and the iron attain the hardness almost of a steel die hardened. The cast-iron impression is then flattened mathematically true on the back, and fixed in a steel die, the hollow of which is turned to the exact size of the cast-iron, and it is set within the rim or border, hammered as close as possible, so as to form a collar. The metal upon which the impression is to be struck (to form either the medal itself or a steel matrix, if desired) is to be fashioned into the shape of a cone in the ordinary way, perfectly flat at the base, heated red-hot, and placed at the bottom dish of the press. When the die, fitted as above, having been previously placed at the top dish, and the workmen quite ready to give the blows instantly, three or four, as may be required, a perfect impression of the cast-iron will be attained without the least injury to it. Of course it will be necessary, previous to the die being used for the artist to polish the surface. Mr. Pistrucci's first experiment was successfully performed upon a punch of hard copper, with his model of Sir Gilbert Blane, being nearly three inches in diameter; and he has no doubt that it will equally succeed on a steel punch, perhaps, too, without its being necessary to heat it. When the process above described shall have been brought to the perfection of which it is capable, there can be no doubt that in the execution of works of this description, it will not only be the saving of the labour of months or years in the engraving of dies, and, consequently, of great expense, but the work to be executed will in all points be, in an instant, an exact fac-simile of the original conception of the artist, instead of representing, as at present, merely the handiwork of the engraver, copied from such original. It will also dispense with the use of very expensive machinery, such as the *tour a portrait*, introduced into the mint by Mr. Pistrucci several years ago, which, however apparently correct in its productions, can never give a perfectly true semblance of the original, even to the limited extent to which it is applicable. And we may possibly be led by it to discover the mode by which the artists o antiquity succeeded in producing these beautiful coins, in which the softness and boldness of the fleshy parts have never yet been equalled by any modern engraver in steel.—*Times.*

FORCE OF THE WIND.

Few persons can have any idea of the excessive power of the wind in high velocities. It appears from our table, No. 3, that at 40 miles an hour, which, is a high wind, the force is no less than 6lbs. to the square foot. How many of our glass windows would stand even this pressure with doors open behind them? At 80 miles an hour, which is a hurricane, the pressure is no less than 24·56lbs. per square foot. Against such a wind as this, it would be exceedingly difficult for the strongest man to keep his legs; to walk against it would be out of the question. At 100 miles an hour, it is said the wind would sweep every thing before it; the pressure would be 38·36lbs. to a square foot. There are few houses of any size, which standing singly, would not present 1.000 square feet. In such a hurricane the power of the wind would be no less than 38,360lbs. or above 17 tons against a house with 1,000 square feet of surface. Its chance of resisting so enormous a force would therefore be very little.—*Ib.*

INVENTION TO SUPERSEDE THE USE OF STEAM.

An invention we have heard, is shortly expected to be laid before the public, by which steam will be, in a great measure, if not wholly, superseded. We are unacquainted with the particulars of the invention, but we have been assured, from two several quarters, that it is simple and efficacious; and is now waiting for the completion of one point in the universal application, which, it is supposed, cannot be long an obstacle.—*Ib.*

EFFECT OF CLIMATE AND CULTIVATION ON VEGETABLES.

The myrtle tree, which, with us, is a small shrub, grows in Van Dieman's Land to the height of 200 feet, and has a trunk from 30 to 40 feet in circumference. The wood resembles cedar. The Chinese have an art by which they are able to produce miniature pines, bearing a perfect resemblance to the gigantic specimens of America, and only five or six inches high.—*Lon. Mech. Mag.*

IMPROVEMENT IN THE STEAM ENGINE.

Professor Nollet, employed in the Museum of the State, has just completed a most important invention; viz., a steam-engine exempt from all danger of explosion, not expensive, occupying but little space, and the moving power of which, at the same temperature as the ordinary machines, has a power six times as great, reducing by one-fifth the consumption of fuel, which is an immense advantage, not only in respect to economy, but to the smaller space which may be required for the stock of coals.—*Brussels Paper.*